



**PERMIT to OPERATE No. 9114  
and  
PART 70 OPERATING PERMIT**

**NUEVO - SOUTH COUNTY OFFSHORE  
PLATFORM HILLHOUSE**

**PARCEL OCS-P-0240  
DOS CUADRAS FIELD  
SANTA BARBARA COUNTY, CALIFORNIA  
OUTER CONTINENTAL SHELF**

**OPERATOR**

**Torch Operating Company ("Torch")**

**OWNERSHIP**

**Nuevo Energy Company  
Aera Energy**

**Santa Barbara County  
Air Pollution Control District**

**March 22, 2000 (APCD PTO & Part 70 Operating Permit)**

-- This page intentionally left blank --

## TABLE OF CONTENTS

<b><u>SECTION</u></b>	<b><u>PAGE</u></b>
<b>1.0 INTRODUCTION.....</b>	<b>1</b>
1.1 PURPOSE .....	1
1.2 FACILITY OVERVIEW.....	1
1.3 EMISSION SOURCES .....	4
1.4 EMISSION CONTROL OVERVIEW .....	4
1.5 OFFSETS/EMISSION REDUCTION CREDIT OVERVIEW .....	5
1.6 PART 70 OPERATING PERMIT OVERVIEW .....	5
<b>2.0 PROCESS DESCRIPTION .....</b>	<b>7</b>
2.1 PROCESS SUMMARY.....	7
2.2 SUPPORT SYSTEMS.....	13
2.3 DRILLING ACTIVITIES.....	13
2.4 MAINTENANCE/DEGREASING ACTIVITIES .....	14
2.5 PLANNED PROCESS TURNAROUNDS .....	14
2.6 OTHER PROCESSES .....	14
2.7 DETAILED PROCESS EQUIPMENT LISTING.....	14
<b>3.0 REGULATORY REVIEW .....</b>	<b>15</b>
3.1 RULE EXEMPTIONS CLAIMED .....	15
3.2 COMPLIANCE WITH APPLICABLE FEDERAL RULES AND REGULATIONS .....	16
3.3 COMPLIANCE WITH APPLICABLE STATE RULES AND REGULATIONS .....	17
3.4 COMPLIANCE WITH APPLICABLE LOCAL RULES AND REGULATIONS .....	17
3.5 COMPLIANCE HISTORY.....	20
<b>4.0 ENGINEERING ANALYSIS .....</b>	<b>26</b>
4.1 GENERAL .....	26
4.2 STATIONARY COMBUSTION SOURCES.....	26
4.3 FUGITIVE HYDROCARBON SOURCES .....	28
4.4 CREW AND SUPPLY VESSELS .....	28
4.5 TANKS/VESSELS/SUMPS/SEPARATORS .....	30
4.6 VAPOR RECOVERY SYSTEMS .....	31
4.7 HELICOPTERS.....	31
4.8 OTHER EMISSION SOURCES .....	31
4.9 BACT/NSPS/NESHAP/MACT .....	32
4.10 CEMS/PROCESS MONITORING/CAM.....	32
4.11 SOURCE TESTING/SAMPLING.....	33
<b>5.0 EMISSIONS .....</b>	<b>36</b>
5.1 GENERAL .....	36
5.2 PERMITTED EMISSION LIMITS - EMISSION UNITS .....	36
5.3 PERMITTED EMISSION LIMITS - FACILITY TOTALS .....	37
5.4 PART 70: FEDERAL POTENTIAL TO EMIT FOR THE FACILITY .....	38
5.5 EXEMPT EMISSION SOURCES/PART 70 INSIGNIFICANT EMISSIONS .....	38
5.6 NET EMISSIONS INCREASE CALCULATION .....	38
<b>6.0 AIR QUALITY IMPACT ANALYSES .....</b>	<b>47</b>
6.1 MODELING .....	47
6.2 INCREMENTS .....	47
6.3 MONITORING .....	47
6.4 HEALTH RISK ASSESSMENT .....	47
<b>7.0 CAP CONSISTENCY, OFFSET REQUIREMENTS AND ERCS .....</b>	<b>48</b>

7.1	GENERAL .....	48
7.2	CLEAN AIR PLAN.....	48
7.3	OFFSET REQUIREMENTS .....	48
7.4	EMISSION REDUCTION CREDITS.....	48
<b>8.0</b>	<b>LEAD AGENCY PERMIT CONSISTENCY .....</b>	<b>48</b>
<b>9.0</b>	<b>PERMIT CONDITIONS .....</b>	<b>49</b>
9.A	STANDARD ADMINISTRATIVE CONDITIONS .....	49
9.B.	GENERIC CONDITIONS.....	53
9.C	EQUIPMENT SPECIFIC CONDITIONS.....	55
9.D	APCD-ONLY CONDITIONS .....	70
<b>10.0</b>	<b>ATTACHMENTS .....</b>	<b>1</b>
10.1	EMISSION CALCULATION DOCUMENTATION .....	1
10.2	EMISSION CALCULATION SPREADSHEETS .....	1
10.3	FEE CALCULATIONS.....	1
10.4	IDS DATABASE EMISSION TABLES .....	1
10.5	PART 70 OPERATING PERMIT CERTIFIED COMPLIANCE PLAN .....	1
10.6	EQUIPMENT LIST .....	1
10.7	EXEMPT/INSIGNIFICANT EQUIPMENT LIST .....	1

## **LIST OF FIGURES and TABLES**

<b><u>TABLE/ FIGURE</u></b>	<b><u>PAGE</u></b>
FIGURE 1.1 - LOCATION MAP FOR PLATFORM HILLHOUSE .....	2
TABLE 3.1 - GENERIC FEDERALLY-ENFORCEABLE APCD RULES .....	22
TABLE 3.2 - UNIT-SPECIFIC FEDERALLY ENFORCEABLE APCD RULES .....	23
TABLE 3.3 - NON-FEDERALLY ENFORCEABLE APCD RULES .....	24
TABLE 3.4 - ADOPTION DATES OF APCD RULES APPLICABLE AT ISSUANCE OF PERMIT .....	24
TABLE 4.1 – SOURCE TEST REQUIREMENTS .....	34
TABLE 4.2 - BEST AVAILABLE CONTROL TECHNOLOGY .....	35
TABLE 5.1-1 - OPERATING EQUIPMENT DESCRIPTION .....	39
TABLE 5.1-2 - EQUIPMENT EMISSION FACTORS .....	40
TABLE 5.1-3 - EMISSION LIMITS BY EMISSION UNIT – SHORT TERM LIMITS .....	41
TABLE 5.1-4 - EMISSION LIMITS BY EMISSION UNIT – LONG TERM LIMITS .....	42
TABLE 5.2 - TOTAL PERMITTED FACILITY EMISSIONS .....	43
TABLE 5.3 - FEDERAL POTENTIAL TO EMIT .....	44
TABLE 5.4 - ESTIMATED PERMIT EXEMPT EMISSIONS .....	45
TABLE 5.5 – NET EMISSIONS INCREASE .....	46

## ABBREVIATIONS/ACRONYMS

AP-42	USEPA's <i>Compilation of Emission Factors</i>
APCD	Santa Barbara County Air Pollution Control District
API	American Petroleum Institute
ASTM	American Society for Testing Materials
BACT	Best Available Control Technology
bpd	barrels per day (1 barrel = 42 gallons)
CAM	compliance assurance monitoring
CEMS	continuous emissions monitoring
dscf	dry standard cubic foot
EU	emission unit
°F	degree Fahrenheit
gal	gallon
gr	grain
HAP	hazardous air pollutant (as defined by CAAA, Section 112(b))
H <sub>2</sub> S	hydrogen sulfide
I&M	inspection & maintenance
k	kilo (thousand)
l	liter
lb	pound
lbs/day	pounds per day
lbs/hr	pounds per hour
LACT	Lease Automatic Custody Transfer
LPG	liquid petroleum gas
M	mega (million)
MACT	Maximum Achievable Control Technology
MM	million
MW	molecular weight
NAR	Non-attainment Area Review
NEI	net emissions increase
NG	natural gas
NSPS	New Source Performance Standards
O <sub>2</sub>	oxygen
OCS	outer continental shelf
ppm(vd or w)	parts per million (volume dry or weight)
psia	pounds per square inch absolute
psig	pounds per square inch gauge
PRD	pressure relief device
PTO	Permit to Operate
RACT	Reasonably Available Control Technology
ROC	reactive organic compounds, same as "VOC" as used in this permit
RVP	Reid vapor pressure
scf	standard cubic foot
scfd (or scfm)	standard cubic feet per day (or per minute)
SIP	State Implementation Plan
STP	standard temperature (60°F) and pressure (29.92 inches of mercury)
THC	Total hydrocarbons
tpy, TPY	tons per year
TVP	true vapor pressure
USEPA	United States Environmental Protection Agency
VE	visible emissions
VRS	vapor recovery system

## 1.0 Introduction

### 1.1 Purpose

General. The Santa Barbara County Air Pollution Control District (APCD) is responsible for implementing all applicable federal, state and local air pollution requirements which affect any stationary source of air pollution in Santa Barbara County. The federal requirements include regulations listed in the Code of Federal Regulations: 40 CFR Parts 50, 51, 52, 55, 61, 63, 68, 70 and 82. The State regulations may be found in the California Health & Safety Code, Division 26, Section 39000 et seq. The applicable local regulations can be found in the APCD's Rules and Regulations.

The County is designated as an ozone nonattainment area for both the state and federal ambient air quality standards. The County is also designated a nonattainment area for the state PM<sub>10</sub> ambient air quality standard.

Part 70 Permitting. The issuance of this Part 70 permit to Platform Hillhouse satisfies the permit issuance requirements of the APCD's Part 70 operating permit program. Platform Hillhouse is a part of the *Nuevo - South County Offshore* stationary source (SSID = 8003), which is a major source for VOC<sup>1</sup>, NO<sub>x</sub> and CO. Conditions listed in this permit are based on federal, state or local rules and requirements. Sections 9.A, 9.B, and 9.C of this permit are enforceable by the APCD, the USEPA and the public since these sections are federally enforceable under Part 70. Where any reference contained in Sections 9.A, 9.B, or 9.C refers to any other part of this permit, that part of the permit referred to is federally enforceable. Conditions listed in Section 9.D are "APCD-only" enforceable.

Pursuant to the stated aims of Title V of the CAAA of 1990 (i.e., the Part 70 operating permit program), this permit has been designed to meet two objectives. First, compliance with all conditions in this permit would ensure compliance with all federally enforceable requirements for the facility. Next, the permit would be a comprehensive document to be used as a reference by Torch, the regulatory agencies, and the public to assess compliance.

### 1.2 Facility Overview

- 1.2.1 Facility Overview: Nuevo Energy Company ("Nuevo") is the principal owner and Torch Operating Company ("Torch") is the sole operator of Platform Hillhouse located on offshore lease tract OCS-P-0240, approximately 5.5 miles south-southeast from the City of Santa Barbara, California (Lambert Zone coordinates x = 987,642 feet, y = 803,937). Platform Hillhouse is owned by the following groups: Nuevo Energy 67.5% and Aera Energy 32.5%. For APCD regulatory purposes, the facility location is in the Southern Zone of Santa Barbara County<sup>2</sup>. Figure 1.1 shows the relative location of the facility within the county.

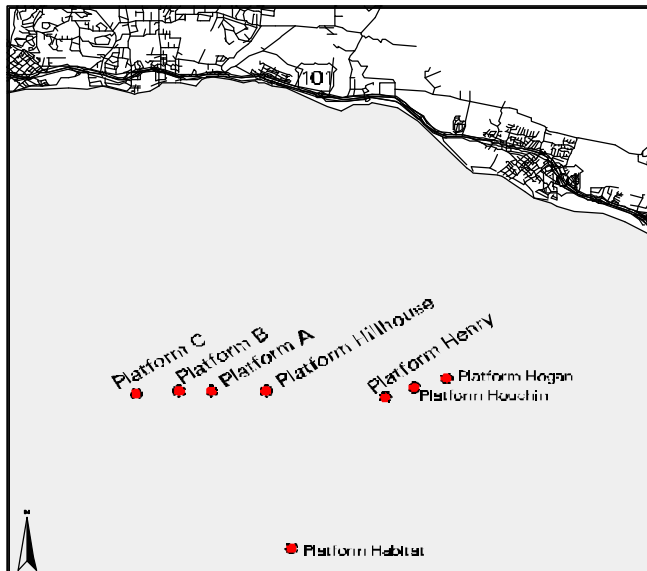
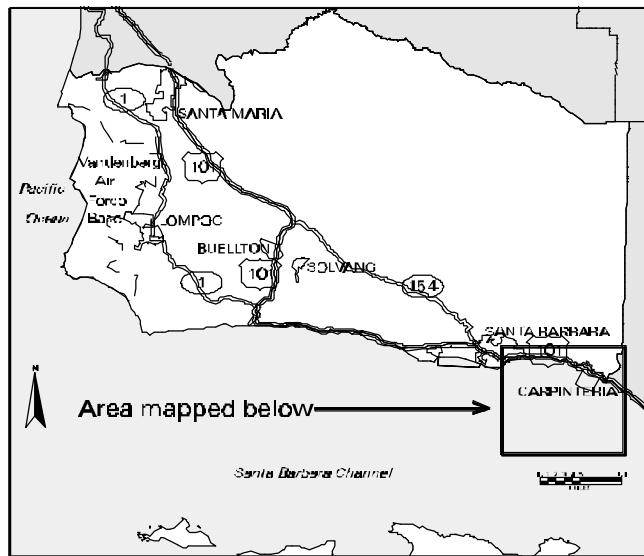
---

<sup>1</sup> VOC as defined in Regulation XIII has the same meaning as reactive organic compounds as defined in Rule 102. The term ROC shall be used throughout the remainder of this document, but where used in the context of the Part 70 regulation, the reader shall interpret the term as VOC.

<sup>2</sup> APCD Rule 102, Definition: "Southern Zone"

**Figure 1.1 Location Map for Platform Hillhouse**

**Nuevo - South County (offshore)**





Platform Hillhouse (FID # 8005) a twelve leg, sixty-well slot platform, was installed in a water depth of 190 feet in 1969, drilling operations began in 1970. Oil and natural gas produced from the platform, as well as oil and sweet gas received from Platform Henry, are transported via two subsea pipelines to Nuevo's Platform A (on contiguous OCS tract P-0241). The average gravity and true vapor pressure of the produced crude oil is 24.6° API and 2.27 psia (at 82° F), respectively. The platform was initially designed to produce 15 million standard cubic feet gas and 30,000 barrels per day (bpd) of wet crude oil (oil/water emulsion); the present production rate is approximately 3.8 million standard cubic feet of gas and approximately 5,100 bpd of oil emulsion.

The *Nuevo - South County Offshore* stationary source consists of the following 5 facilities:

- Platform A (FID=8003)
- Platform B (FID=8004)
- Platform C (FID=8006)
- Platform Hillhouse (FID=8005)
- Platform Henry (FID=8007)

Platform Hillhouse consists of the following systems:

- Production wellhead and subsurface system
- Well cleanup system
- Test separation system
- Oil shipping, metering, and pipeline system
- Produced water system
- Low pressure compression system
- Gas compression system
- Gas shipping and metering system
- Electrical system
- Safety system

The oil and gas undergo initial separation to reduce water and sediment content prior to being shipped to Nuevo Platform A. From Platform A, the produce is shipped to the Rincon facility. All equipment on Platform Hillhouse, except two pedestal cranes, two emergency generators and one emergency fire pump, are powered by the SCE electric grid provided through a 34.5 kV subsea cable from shore.

- 1.2.2 Facility New Source Review Overview: Since the issuance of the initial operating permit on September 4, 1994, there have been four (4) NSR permit actions along with two change of ownership actions. These were:

*ATC/PTO Mod 9114-02*: This permit added condition No. 34 (Crew and Supply Boat Stationary Source Maximum Permitted Emissions and Operational Limits). The purpose was to redefine the stationary source's annual potential to emit, which is used to determine fees for Air Quality Plans pursuant to Rule 210. This permit was issued on 5/2/96.

*Change of Ownership 9114-01/02:* Two ownership change notices were approved. The first one was filed on 4/15/96 changing ownership from Unocal to Torch; and, the second one was filed on 4/21/97 changing ownership from Torch to Nuevo (*Torch remained as operator*).

*ATC/PTO 9790:* This ATC/PTO reflects the well bay modifications (gas header installation) carried out at the platform that resulted in a significant increase in fugitive emissions component (e.g., valves and flanges) count. The net emissions increase (NEI) from this change amounted to 13.76 lbs./day of ROC. The ATC/PTO was issued on March 12, 1998.

*ATC/PTO 10092:* This permit authorizes Nuevo/Torch to replace the supply boat that serves OCS Platform Hillhouse. There is no Net Emissions Increase associated with this project because the total emissions from the supply boat decrease. This permit was issued on 3/30/99.

*ATC/PTO 10142:* This permit authorizes Torch to change its pigging frequency at Platform Hillhouse, and to revise the allowable boat fuel use. This permit was issued on 11/30/99

### **1.3 Emission Sources**

Air pollution emissions from Platform Hillhouse are the result of combustion sources, storage tanks and piping components, such as valves and flanges. Section 4 of the permit provides the District's engineering analysis of these emission sources. Section 5 of the permit describes the allowable emissions from each permitted emissions unit, the platform as a whole, and also lists the potential emissions from non-permitted emission units.

The emission sources include:

1. Crew boats used for personnel and cargo to and from the platform.
2. Supply boats used for transport of equipment, fuel, and supplies to and from the platform.
3. One 25-ton pedestal crane operated by a diesel internal combustion engine.
4. One 15-ton pedestal crane operated by a diesel internal combustion engine.
5. Two emergency diesel-fired generators that are operated in power/drilling situations.
6. One stand-by diesel-fired fire water pump that is operated in emergency situations.
7. Piping components, produced water tanks, and other evaporative sources that release fugitive hydrocarbons into the atmosphere.
8. Fugitive hydrocarbons emitted into the atmosphere from solvent use and pigging.
9. Flare relief system to combust hydrocarbon gases.

A list of all permitted equipment is provided in Section 10.6.

### **1.4 Emission Control Overview**

Air quality emission controls are utilized on Platform Hillhouse for a number of emission units to reduce air pollution emissions. Additionally, the use of onshore utility grid power allows Platform Hillhouse to operate without large gas turbine-powered generators or compressors. The emission controls employed on the platform include:

- A Fugitive Hydrocarbon Inspection & Maintenance (I&M) program for detecting and repairing leaks of hydrocarbons from piping components, consistent with the requirements of Rule 331, to reduce ROC emissions by approximately 80 percent.

- Use of turbo-charging, inter-cooling and a cleaner burning engine with computer-controlled injectors on supply boat main engines to achieve a NO<sub>x</sub> emissions rate of 5.48 g/bhp-hr.
- Use of turbo-charging, inter-cooling, and 4° injection timing retard on the crew boat main engines to achieve a NO<sub>x</sub> emissions rate of 8.4 g/bhp-hr.
- Use of Type "B" diesel fuel injectors on the 25-ton pedestal crane engines to achieve NO<sub>x</sub> emissions of 8.4 g/bhp-hr, consistent with Rule 333.
- Use of a flare relief system to combust hydrocarbon gases that would otherwise be released directly to the atmosphere.

## 1.5 Offsets/Emission Reduction Credit Overview

This facility does not require emission offsets nor does it provide emission reduction credits.

## 1.6 Part 70 Operating Permit Overview

- 1.6.1 Permit Life and Federally-enforceable Requirements: The Part 70 permit expires five years from the date of issuance, with an application required to be submitted for renewal. All federally enforceable requirements are listed in 40 CFR Part 70.2 (*Definitions*) under “applicable requirements.” These include all SIP-approved APCD Rules, all conditions in the APCD-issued Authority to Construct permits, and all conditions applicable to major sources under federally promulgated rules and regulations. All permits (and conditions therein) issued pursuant to the OCS Air Regulation are federally enforceable. All these requirements are enforceable by the public under CAAA. (*see Tables 3.1 and 3.2 for a list of federally enforceable requirements*).
- 1.6.2 Insignificant Emissions Units (IEU): Equipment or activities exempted from permitting under APCD Rule 202 are considered as insignificant emissions units. The guidance under the USEPA's White Paper II, Sections C.2.c and C.2.d, applies to insignificant emissions units (*See Attachment 10.7 for the Insignificant Emissions Unit list*).
- 1.6.3 Federal Potential to Emit: The federal potential to emit (PTE) of a stationary source does not include fugitive emissions of any pollutant, unless the source is: (1) subject to a federal NSPS/NESHAP requirement, or (2) included in the 29-category source list specified in 40 CFR 51.166 or 52.21. The federal PTE does include all emissions from any insignificant emissions units. Platform\_Hillhouse is not subject to any NSPS or NESHAP; thus, its fugitive emissions are not included in its federal PTE. (*See Section 5.4 for the federal PTE for this source*).
- 1.6.4 Permit Shield: The operator of a major source may be granted a shield: (a) specifically stipulating any federally-enforceable conditions that are no longer applicable to the source and (b) stating the reasons for such non-applicability. The permit shield must be based on a request from the source and its detailed review by the APCD. Permit shields cannot be indiscriminately granted with respect to all federal requirements. Torch has not made a request for a permit shield.
- 1.6.5 Alternate Operating Scenarios: A major source may be permitted to operate under different operating scenarios, if appropriate descriptions of such scenarios are included in its Part 70 permit

application and if such operations are allowed under federally-enforceable rules. Torch made no request for permitted alternative operating scenarios.

- 1.6.6 Compliance Certification: Part 70 permit holders must certify compliance with all applicable federally enforceable requirements including permit conditions. Such certification must accompany each Part 70 permit application; and, be re-submitted annually on or before March 1<sup>st</sup> or on a more frequent schedule specified in the permit. Each certification is signed by a “responsible official” of the owner/operator company whose name and address is listed prominently in the Part 70 permit (*see Section 1.6.9 below*).
- 1.6.7 Permit Reopening: Part 70 permits are re-opened and revised if the source becomes subject to a new rule or new permit conditions are necessary to ensure compliance with existing rules. The permits are also re-opened if they contain a material mistake or the emission limitations or other conditions are based on inaccurate permit application data. This Part 70 permit may be re-opened to address the USEPA's new compliance assurance monitoring (CAM) rules, if the permit is revised significantly prior to its first expiration date. (*see Section 4.9.3, CAM Rule*).
- 1.6.8 Hazardous Air Pollutants (HAPs): Part 70 permits also regulate emission of HAPs from major sources through the imposition of maximum achievable control technology (MACT), where applicable. However, based on CAAA, Section 112 (n) (4) stipulations, HAP emissions from any equipment **at this facility** cannot be aggregated with HAP emissions from other similar units at the facility (*or aggregated for any purposes*); hence, HAPs, including any lease-wide HAP emissions computations, are not addressed in this permit.
- 1.6.9 Responsible Official: The designated responsible officials and their mailing address is:

**Mr. Phil Sorbet, California Assistant Manager, and  
Mr. Gary Grove, District Exploitation Manager  
Nuevo Energy Company  
201 South Broadway  
Orcutt, California 93455**

## 2.0 Process Description

### 2.1 Process Summary

- 2.1 Process Summary: Platform Hillhouse produces both oil and gas. Production equipment includes oil and gas separators, treaters, a LACT unit, oil shipping pumps, gas compressors, flotation cell units, and water treating and injection equipment. Platform Hillhouse has minimal production facilities, as there is no crude oil or gas dehydration or treating equipment on the platform. The wet crude oil and natural gas produced from the platform are sweet and have low concentrations of H<sub>2</sub>S and mercaptans.

Crude oil and wet natural gas are shipped through separate subsea pipelines first to Platform A and from there to the Rincon onshore oil and gas plant for further processing. Oil and gas from Nuevo's Platform Henry are received on Platform Hillhouse and combined with Hillhouse production prior to shipment to Platform A and the Rincon facility. Produced water from Platforms Henry and Hillhouse is treated and either disposed of offshore in accordance with NPDES permit conditions or pumped into an injection well.

- 2.1.1 *Production*: Platform Hillhouse has 60 well slots located in two well bays. There is presently a total of 47 production wells and one (1) injection well. Nuevo drilled its last well (A-54) in 1995. The wells are not free flowing; submersible pumps, progressive cavity pumps, or rod pumps have been installed in all wells in order to produce them. Platform Hillhouse has a design production rate of 30,000 bpd (barrels per day) of crude oil (oil and water) and 15 MMscfd (million standard cubic feet) of natural gas.

The oil production flow line from each wellhead ties into one of three separate piping manifolds or headers. These three manifolds are the production header, test header, and well clean-up header. Normally, each well flows into one of the two production headers and from there into the production separators (MBD-1201, 1202). Redundant production systems are provided on the platform to allow equipment maintenance and repair without having to interrupt production.

Two test headers and test separators (MBD-1203 and MBD-1204) are used to flow test the individual production wells. For the flow test, the well is switched from the production header to the test header. Only one well is tested at a time in each test separator. The well clean-up header and separator (MBD-1211) is used to start-up a well after testing or work over activities are completed. For the first few hours when a well is brought back on line, gas surges and contamination from drilling fluids or reservoir sand can occur. The well clean-up separator is a vertical vessel with a high gas capacity. After the flow rate stabilizes and any drilling fluids are removed, the well is switched to the production header and separator.

From the production, test, and well clean-up separators, the crude oil flows to treaters (MBK-1221 or MBK-1222). Platform Hillhouse treaters also process crude oil received from Platform Henry via a sub-sea pipeline. Crude oil from Platform Henry first enters an oil surge tank (MBJ-1205) before it flows to the treaters. The treaters are larger than the separators and are used to reduce the water cut (*i.e.*, water concentration) of the crude oil. Oil and water separation in the treater takes

place through gravity and electrostatic methods; the water cut of the crude oil leaving the treater is controlled at approximately 5 percent. Produced water is pumped directly to the floatation cell units.

The oil from the treaters is pumped to the production surge vessel (MZZ-1231). The vessel provides surge capacity and adequate suction pressure for the LACT (Lease Automatic Custody Transfer) pumps (PBA-3231 and PBA-3232). From the LACT unit, oil goes to the metered surge vessel (MAV-1241) and is then pumped by the oil shipping pumps (PAX-3211, PAX-3212, and PAX-3213) to Platform A via an eight-inch sub-sea pipeline. A turbine meter is provided on the pipeline to measure the oil flow rate and measure the total amount of oil transferred.

No gas processing (*e.g.*, sweetening or dehydration) is done on Platform Hillhouse. Gas from the separators, treaters, and surge vessels is compressed and commingled with the gas received from Platform Henry. The combined gas stream is shipped in an eight-inch subsea pipeline to the Rincon onshore plant for processing.

- 2.1.2 *Gas, Oil, and Water Separation:* Fluid from the production wells is a mixture of oil, gas, and water. The separation of the streams is accomplished in production separators (MBD-1201 and MBD-1202). They are horizontal 6' diameter by 18'3" seam-to-seam, two-phase separators (one gas phase outlet and one liquid phase outlet). Each separator has a capacity of 18,000 bpd of crude oil and 15 MMscfd of natural gas. The wells are produced directly into the production separators. The production from all the wells on Platform Hillhouse is normally handled by these two separators.

The production separators operate at 40 psig and 90°F. The gas section (top half) of the separator is sized to sufficiently reduce the gas velocity to cause any liquid to drop out. The separators also have a mist extractor to promote removal of liquid droplets from the gas stream. The gas from the production separators flows to the filter separator (MAK-1263). Liquid droplets removed in the filter separator go to the north and south treaters (MBK-1221 and MBK-1222); gas from the filter separator goes to the suction line for the Ariel and Worthington compressors.

The liquid section (bottom half) of the separator is designed to provide sufficient retention time to allow entrained gas to bubble off from the liquid, but is not large enough to allow separation of the oil and water into two separate streams. The liquid level in the production separator is automatically controlled by a level control valve. The oil and water discharged from the production separator flows to the north and south treaters.

North and south treaters (MBK-1221 and MBK-1222) are electrostatic dehydrators that remove emulsified water from the oil. The oil and water emulsion flows through electrically charged grids in each treater, where the dispersed water droplets are electrically charged. The charged droplets repel and attract each other until they collide and coalesce and then settle out of the oil by gravity separation. About 10,000 bpd of water is removed in the treaters. The horizontal treaters are 10' diameter by 20' seam-to-seam vessels that normally operate at 30 psig.

Water and crude oil levels in the treaters are independently controlled. The water level controller governs the pumping rate of the produced water from the treaters to the floatation cell units (ABM-

1273 and ABM-1277). The oil level controller controls the pumping rate of oil to the production surge vessel (MZZ-1231).

- 2.1.3 *Waste Water Treatment:* Platform Hillhouse has a produced water treating and disposal system. Two floatation cell units (ABM-1273 and ABM-1277) treat the produced water separated in the treaters. The floatation cell units each have a design capacity of 15,000 bpd and can operate in series or parallel. About 10,000 bpd of water is separated from the oil in the treaters; clean water from the Floatation cell units is pumped to the floatation cell surge tank (ABM-1275). The floatation cell units agitate the produced water creating an oily froth that can be skimmed; skimming from the floatation cell units gravity flow to the drain sumps. Clean water from the floatation cell units is pumped by the floatation cell pumps (PBE-3274 and PBE-3275) to the floatation cell surge tank (ABM-1275). Waste water from the surge tank is discharged to the ocean in accordance with the existing NPDES (National Pollutant Discharge Elimination System) permit.
- 2.1.4 *Well Testing and Maintenance:* To measure the oil, gas, and water flow rates from a well, the well is produced into one of two test separators (MBD-1203 and MBD-1204) by closing the well flow line valve to the production header and opening the well flow line valve to the test header. The test separators are 3' in diameter by 15' seam-to-seam horizontal two-phase separators. Each separator has a capacity of 3,000 bpd liquid and 5 MMscfd of natural gas; separator capacity is smaller than the production separators, since only one well is tested at a time. The gas and liquid sections in the test separator are sized similarly to the production separators, and the test separator has a mist extractor to promote removal of liquid droplets from the gas stream. The test separators normally operate at 40 psig and 90° F. Gas from the test separator is commingled with gas from the production separators and is compressed by either the Worthington or the Ariel compressor. The gas stream from each test separator is measured by an orifice meter in the outlet line.

Liquid from each test separator is measured by a turbine meter, which measures the total flow rate of the combined oil and water stream. The water cut (concentration) is determined by taking samples. Oil and water from the test separators are combined with the oil and water from the production separators; the combined flow is then processed in the north and south treaters.

After a well workover is completed, oil production from the well goes to the well clean-up separator (MBD-1211). This procedure segregates the well from the rest of the platform's wells and prevents contamination of the production separators and piping. The initial production from a well can also have frequent flow surges or high gas flow rates. Producing the well into the well clean-up separator prevents upsetting the normal production from the platform. After the flow from the well has stabilized, it is switched back to the production header and separator.

The well clean-up separator is a vertical 3'6" diameter by 15' seam-to-seam two-phase separator with a capacity of 4,000 bpd and five MMscfd of natural gas. The well clean-up separator operates at 40 psig and 90° F. Gas and liquid sections are sized in similar proportion to the production and test separators, and gas from the separator is commingled with the gas from the production separators and sent to the gas compressors.

The liquid from the well clean-up separators is measured by a turbine meter that measures the total flow rate of the combined oil and water stream. The water cut (concentration) is determined by

taking samples. Clean production from the well clean-up separator is combined with the oil and water from the production separator and the combined flow is then processed in the treaters.

2.1.5 *Crude Oil Storage:* There are no crude oil storage facilities on Platform Hillhouse. The produced oil/water emulsion is shipped to Platform A where it commingles with the production from Platforms A, B, and C at the subsea pipeline tie-in.

2.1.6 *Emulsion Shipping:* Oil separated in the treaters is pumped by treater oil pumps (PBE-3235 and PBE-3237) to the production surge vessel (MZZ-1231). The production surge vessel is a 10' diameter by 18' seam-to-seam vertical pressure vessel operating at 20 psig. The vessel provides surge capacity to stabilize the flow of oil and prevents upsets in the Lease Automatic Custody Transfer (LACT) meters. Oil from the production surge vessel is pumped through the LACT meters and into the metered surge vessel (MAV-1241).

The metered surge vessel provides surge capacity so the oil shipping pumps (PAX-3211, PAX-3212, and PAX-3213) can operate continuously. Each oil shipping pump has approximately a 15,000 bpd capacity at a 150 psig discharge pressure. Normally only a single pump is in operation; a second pump is started automatically by a high level switch on the metered surge vessel. The oil flow rate is metered by a turbine meter at the inlet of the eight inch pipeline to Platform A.

2.1.7 *Drain Sumps:* Platform Hillhouse has two drain sumps (ABH-1212 and ABH-1213) that collect oily water from the platform deck drains and production equipment drains. The decks on Platform Hillhouse have curbs around the perimeter and curbs or seals around the deck penetrations to prevent any liquids from spilling overboard. The sumps operate at atmospheric pressure. Three sump pumps (PBE-3292, PBE 3263, and PBR 3264) transfer the liquid collected in the drain sumps to the settling tank (MBF-1261), which is also at atmospheric pressure. Two of the sump pumps are started and stopped automatically by level switches on the drain sumps. The liquid in the settling tank is transferred by the waste water pumps (PBE-3221 and PBE 3222) to the floatation cell units.

2.1.8 *Gas Compression, Dehydration, and Disposition:* The natural gas removed from the crude oil in the production separators, test separators, well clean-up separator, treaters, and oil surge vessels is compressed, commingled with gas from Platform Henry, and shipped to Platform A via an eight-inch subsea pipeline. The gas is not dehydrated on Platform Hillhouse.

Natural gas is compressed by either the Ariel or Worthington compressor to a pressure of 100 psig; each compressor has a capacity of 4 MMscfd at 100 psig discharge pressure. A suction scrubber is provided in the suction line of each compressor to remove entrained liquids that could damage the compressor. The discharge from the Ariel compressor is cooled by a shell and tube exchanger (HBG-2297); the discharge from the Worthington compressor is not cooled.

The discharge from the Ariel and Worthington compressors is combined with the gas received from Platform Henry. The combined gas stream goes to Platform A via an eight inch subsea pipeline; the gas flow rate is measured and recorded with an orifice meter at the inlet of the gas pipeline.



- 2.1.9 *Condensate Chilling*: A condensate chiller system, installed in 1999, reduces the dew point of sales gas and prevents the formation of liquids in the gas pipeline. The system consists of an inlet separator, a heat exchanger, a suction scrubber, a chiller, a refrigerant compressor, an economizer, a low-temperature separator and a condenser. Gases from the pipeline compressors listed above enter the inlet separator where any free liquids drop out. The gas flows to the chiller where its temperature is reduced to 45° F. The chilled gas enters the low-temperature separator, where any residual liquids are removed. The gas is then piped to Platform A and then to shore via the gas pipelines. The liquids from the separators are continuously “slipstreamed” into the produced oil and piped to Platform A and then to shore. This avoids the liquids from being shipped as slugs through the pipeline.
- 2.1.10 *Gas Sweetening and Sulfur Recovery*: The gas produced from Platform Hillhouse is sweet gas. There are no gas sweetening or sulfur recovery facilities on Platform Hillhouse.
- 2.1.11 *Vapor Recovery Systems*: Low pressure gas from the floatation cell units, floatation cell surge tank, settling tank, small drilling water tank, west sump and east sump goes through a suction scrubber (MBF-1281) to remove entrained liquids and is then compressed to about 40 psig by the vapor recovery compressors (CAE-2201 and CAE-2202). *Note that the platform uses two-stage compression, i.e., operates two low-pressure and two high pressure compressors.* Gas discharged from the vapor recovery compressor is combined with the gas from the separators and compressed by either the Ariel compressor or Worthington compressor.

Pressure relief valves on pressure vessels, compressors, and other equipment handling hydrocarbon liquids or vapors discharge to an eight inch vent relief header. The pressure relief valves only open during emergency situations. The vent relief header flows into the atmospheric vent scrubber (MBF-1289), which removes any liquid discharged from the pressure relief valves; the gas then goes to the platform vent stack. The liquid from the vent scrubber is drained to the drain sumps (ABH-1212 and ABH-1213).

- 2.1.12 *Fuel Gas System*: Platform Hillhouse does not have a fuel gas system. There is no equipment on Platform Hillhouse that burns natural gas.

Platform Hillhouse is equipped with a diesel storage tank in the south crane pedestal with a capacity of approximately 230 bbl. Diesel fuel is used by the two pedestal cranes and by emergency equipment such as the diesel fire water pump and standby diesel generator. Diesel fuel #2 containing less than 0.2% sulfur by weight is used.

- 2.1.13 *Flare Relief System*: Platform Hillhouse is equipped with a flare system to minimize emissions of ROC's that would otherwise be emitted to the atmosphere.
- 2.1.13.1 *Flare System Design*: The flare system receives gas from relief valves and piping vents which are first routed to the flare header. The equipment connected to the flare header are as follows:
- Production separators (MBD-1201 and 1203)
  - Test separators (MBD-1203 and 1204)
  - Well clean-up separator (MBD-1211)
  - Henry oil surge tank (MBJ-1205)

- Treaters (MBK-1221 and 1222)
- Henry treater (MBK-1223)
- Production surge vessel (MZZ-1231)
- Metered surge vessel (MAV-1241)
- Filter separator (MAK-1263)
- Vapor recovery scrubber (MBE-1281)
- Surge vessel (MZZ-1283)
- Worthington scrubber (MBF-1284)
- Henry gas scrubber (MBF-1245)
- Settling tank (MBF-1261)
- Sump tanks (ABH-1212 and 1213)
- Ariel compressor (CAE-2203)
- Worthington compressor (CAE-2204)
- Vapor recovery compressors (CAE-2201 and 2202)
- Production gas header pressure control valve (PCV-1289)

All gas collected in the flare header is routed to the flare boom and on to the flare tip where it is burned. A Daniels ten-inch orifice meter is used to measure and record the gas that is flared. Its range of operation is 0.012 MMscfd minimum to 10 MMscfd maximum.

2.1.13.2 *Planned Flaring Events:* Flaring emissions to the atmosphere are due to both planned and unplanned events. Planned events include (but are not limited to):

- pipeline pigging operations
- compressor shutdowns/startups for routine maintenance
- well casing blow downs during workover and rig operations
- new well unloading and cleanup
- clearing of gas lines during equipment or process turnarounds
- episodic events such as equipment depressurization for maintenance, purging of vessels and gas pipeline blowdowns
- MMS ordered safety tests

2.1.13.3 *Unplanned Flaring Events:* Unplanned flaring events are defined as all flaring that does not meet the definition of planned flaring under Rule 359. Unplanned or emergency events include, but are not limited to, the following:

- emergency shutdowns caused by safety devices
- well surges during drilling or production
- unintentional pressure safety valve releases
- processing equipment or compressor failures
- onshore facility failures that affect platform operations
- faulty-sensor caused shutdowns
- high/low temperature and pressure indicated shutdowns
- electrical equipment failures and power failure
- pipeline failures
- earthquakes or other unforeseeable emergency events
-

## **2.2 Support Systems**

- 2.2.1 *Piping Assemblies and Pipelines:* The piping on Platform Hillhouse is designed, tested, and installed in general accordance with API 14C and 14E.

Two pipelines are associated with shipping material from the platform: an 8-inch emulsion line and an 8-inch gas line. Both pipelines go to Platform A. Three pipelines are used to transport oil, gas, and water from Platform Henry to Platform Hillhouse.

- 2.2.2 *Power Generation:* Electrical power for Platform Hillhouse is provided from shore by Southern California Edison through a 34.5 kV subsea cable. The platform has a 500 kW diesel stand-by generator which is used in the event of a power outage from Southern California Edison. During such a power failure, the Motor Control Center (MCC) on Platform Hillhouse supplies standby power from the diesel generator to critical equipment. A 24-volt battery backup system is provided for the essential platform controls.

- 2.2.3 *Crew Boats:* Torch uses one crew boat for crew and light supply transport in support of Platform Hillhouse. The crew boat makes four round trips per day, seven days a week, to the platform from Casitas Pier in Carpinteria. The crew boat also services Torch's Platforms A, B, C, and Henry.

- 2.2.4 *Supply Boats:* Torch uses one supply boat for supply and equipment transport in support of Platform Hillhouse. When the platform is in a production mode (i.e., no drilling or well repair), the supply boat activity is approximately 1-2 trips per month. During well drilling or well repair activity, the supply boat activity increases to about one trip every five days. The supply boat, based in Port Hueneme, also services Platform's Henry, A, B, C, Gina, Gilda, and Irene.

- 2.2.5 *Helicopter:* There is a helipad on Platform Hillhouse, but helicopters are not used for routine offshore transportation.

- 2.2.6 *Emergency Response Drills:* Torch conducts periodic and unannounced emergency response drills. Several plans have been developed for different types of emergency situations that could occur on or around the platform. The plans include the Emergency Evacuation Plan and Oil Spill Contingency Plan. All of the plans have been prepared to comply with applicable rules and regulations and guidelines set forth by the appropriate regulatory agencies. In addition, the following drills are practiced by the entire crew on a regular basis: (1) man overboard, (2) combustible gas, (3) abandon platform, (4) emergency shut down, and (5) fire drills.

## **2.3 Drilling Activities**

- 2.3.1 *Drilling Program:* Platform Hillhouse has a resident electric drilling rig, which is used for drilling oil-gas production wells. A standby emergency drilling generator is available for use in case of power failure during drilling operations. Four drilling programs were conducted on Platform Hillhouse between 1970 and 1985. A total of 46 wells were drilled.

- 2.3.2 *Well Workover Program:* The resident electric drilling rig is used for servicing wells. Well workover programs have been conducted in the past on Platform Hillhouse and may likely occur in the future.

## **2.4 Maintenance/Degreasing Activities**

- 2.4.1 *Paints and Coatings*: Maintenance painting on Platform Hillhouse is conducted on an intermittent basis. Normally only touchup and equipment labeling or tagging is done with cans of spray paint.
- 2.4.2 *Solvent Usage*: Solvents not used for surface coating thinning may be used on the platform for daily operations. Usage include cold solvent degreasing and wipe cleaning with rags.

## **2.5 Planned Process Turnarounds**

Process turnarounds on platform equipment are scheduled to occur when the onshore receiving facilities are required to shut down for maintenance. There are approximately one or two turnarounds per year, each of which lasts from two to three days. Major pieces of equipment such as gas compressors undergo maintenance as specified by the manufacturer. Maintenance of critical components is carried out according to the requirements of Rule 331 {Fugitive Emissions Inspection and Maintenance}. The emissions from planned process turnarounds are incorporated in the emissions category for planned flaring.

## **2.6 Other Processes**

- 2.6.1 *Pigging*: Two (2) pig launchers and two (2) pig receivers are installed at Platform Hillhouse. Pig launching occurs between the platform and Platform A, and pig receiving occurs between the platform and platform Henry. Oil lines are pigged twice a week, gas lines two to three times a week. All pig launchers and receivers are connected both to the blanket gas system and to the platform's vapor recovery system. This ensures an ROC removal efficiency of 90 percent and a low ROC/TOC ratio (= 0.13).
- 2.6.2 Torch has stated that no other processes exist that would be subject to permit.

## **2.7 Detailed Process Equipment Listing**

Refer to the tables in Attachment 10.6 and 10.7 for a complete listing of all permitted and exempt emission units.

### 3.0 Regulatory Review

This Section identifies the federal, state and local rules and regulations applicable to Platform Hillhouse.

#### 3.1 Rule Exemptions Claimed

- ☐ District Rule 202 (*Exemptions to Rule 201*): Torch has requested a number of exemptions under this rule. An exemption from permit, however, does not necessarily grant relief from any applicable prohibitory rule. The following exemptions were approved by the District:
  - ☐ Section 202.F.1.d for one emergency electrical generator driven by a diesel-fired piston internal combustion engine rated at 755 bhp, and one firewater pump driven by a diesel-fired piston internal combustion engine rated at 210 bhp.
  - ☐ Section 202.F.6 for one emergency drilling generator driven by a diesel-fired piston internal combustion engine rated at 730 bhp,
  - ☐ Section 202.V.2 for two diesel fuel storage tanks; 6,000 gallons and 300 gallons capacity.
  - ☐ Section D.6 (*De Minimis Exemption*). Torch has documented 'de minimis' changes in a project installed between 7/95 and 12/95 for Platform Hillhouse (re: Torch's December 19, 1997 letter to the APCD). These changes resulted in an *estimated* cumulative project increase of 2.39 lbs./day of ROC; thus, the 24 lbs./day exemption threshold is not exceeded.
    - Section D.8 for routine repair or maintenance of permitted equipment.
    - Section D.14 for application of architectural coating in the repair and maintenance of a stationary structure.
    - Section U.3 for wipe cleaning using solvents as long as the solvents meet other applicable requirements and the use does not exceed 55 gallons/year.
    - Section D.5 for temporary equipment (*a written request to the APCD is required*).
- ☐ District Rule 331 (*Fugitive Emissions Inspection and Maintenance*): The following exemptions were applied for and approved by the District:
  - Section B.2.b for components buried below the ground.
  - Section B.2.c for one-half inch or smaller stainless steel tube fittings.
  - Section B.3.b for components handling liquids or gases with ROC concentrations less than 10 percent by weight.
- ☐ District Rule 325 (*Crude Oil Production and Separation*): The following exemptions were applied for and approved by the District:

Section B.1.b for any temporary tank battery used for the purpose of holding or storing crude oil from any new crude oil production well for a period of up to 90 days following initial production from that well. Torch has claimed this exemption for the two portable tanks A/B.

- ☐ District Rule 333 (*Control of Emissions from Reciprocating Internal Combustion Engines*): Under Section B.1.b, engines exempt per Rule 202 are also exempt from the requirements of this rule. Therefore, those engines listed above under the Rule 202 exemption are not required to comply with Rule 333. Furthermore, the south pedestal crane (15-ton), driven by a diesel-fired piston internal combustion engine rated at 109 bhp, is exempted per Section 333.B.2 (less than 200 hours per year of operation) from Sections D (emission limits), E (engine inspections), F (compliance plan) and G (testing).

### **3.2 Compliance with Applicable Federal Rules and Regulations**

40 CFR Parts 51/52 {New Source Review (Nonattainment Area Review and Prevention of Significant Deterioration)}: Platform Hillhouse was constructed and permitted prior to the applicability of these regulations. However, all permit modifications after September 4, 1992 are subject to APCD NSR requirements. [Note: Some equipment installed after September 4, 1992 were identified earlier in the OCS Compliance Plans, and thus were not subject to NSR requirements] Compliance with APCD Regulation VIII (*New Source Review*) ensures that future modifications to the facility will comply with these regulations.

3.2.2 40 CFR Part 55 {OCS Air Regulation}: Torch is operating Platform in compliance with the requirements of this regulation.

3.2.3 40 CFR Part 60 {New Source Performance Standards}: None of the equipment in this permit are subject NSPS requirements.

3.2.4 40 CFR Part 61 {NESHAP}: None of the equipment in this permit are subject NESHAP requirements.

3.2.5 40 CFR Part 63 {MACT}: This facility will submit to the USEPA its 'Notice of Applicability' of *40 CFR 63: Subpart HH, (Oil & Gas Production MACT)*, prior to June 17, 2000; and, will comply with the requirements of this Subpart, if it is applicable, by 6/17/2002.

3.2.6 40 CFR Part 64 {Compliance Assurance Monitoring}: This rule became effective on April 22, 1998. Compliance with this rule is not required until the next Part 70 permit renewal or significant permit revision.

3.2.7 40 CFR Part 70 {Operating Permits}: This Subpart is applicable to Platform Hillhouse. Table 3.1 lists the federally-enforceable APCD promulgated rules that are "generic" and apply to Platform Hillhouse. Table 3.2 lists the federally-enforceable APCD promulgated rules that are "unit-specific". These tables are based on data available from the APCD's administrative files and from Torch's Part 70 Operating Permit application No. 9646. Table 3.4 includes the adoption dates of these rules.

In its Part 70 permit application 9646 (Forms I and J), Torch certified compliance with all existing APCD rules and permit conditions. This certification is also required of Torch annually. In addition, Torch's certified compliance statement, outlined in Form I, forms a part of this permit (see also Section 9.A of this permit). The

plan is included in Section 10.5 of this permit. Issuance of this permit and compliance with all its terms and conditions will ensure that Torch complies with the provisions of all applicable Subparts.

### **3.3 Compliance with Applicable State Rules and Regulations**

- 3.3.1 Division 26. Air Resources {California Health & Safety Code}: The administrative provisions of the Health & Safety Code apply to this facility and will be enforced by the APCD. These provisions are APCD-enforceable only.
- 3.3.2 California Administrative Code Title 17: These sections specify the standards by which abrasive blasting activities are governed throughout the State. All abrasive blasting activities at Platform Hillhouse are required to conform to these standards. Compliance will be assessed through onsite inspections. These standards are APCD-enforceable only. However, CAC Title 17 does not preempt enforcement of any SIP-approved rule that may be applicable to abrasive blasting activities.

### **3.4 Compliance with Applicable Local Rules and Regulations**

- 3.4.1 Applicability Tables: In addition to Tables 3.1 and 3.2, Table 3.3 lists the non-federally enforceable APCD promulgated rules that apply to Platform Hillhouse. Table 3.4 lists the adoption date of all rules applicable to this permit at the date of this permit's issuance.
- 3.4.2 Rules Requiring Further Discussion: The last facility inspections occurred on September 13, 1999. The inspector reported that the facility was in compliance with all APCD rules and PTO conditions. This section provides a more detailed discussion regarding the applicability and compliance of certain rules. The following is a rule-by-rule evaluation of compliance for Platform Hillhouse:

*Rule 301 - Circumvention*: This rule prohibits the concealment of any activity that would otherwise constitute a violation of Division 26 (Air Resources) of the California H&SC and the SBCAPCD rules and regulations. To the best of the District's knowledge, Torch is operating in compliance with this rule.

*Rule 302 - Visible Emissions*: This rule prohibits the discharge from any single source any air contaminants for which a period or periods aggregating more than three minutes in any one hour which is as dark or darker in shade than a reading of 1 on the Ringelmann Chart or of such opacity to obscure an observer's view to a degree equal to or greater than a reading of 1 on the Ringelmann Chart. Sources subject to this rule include: the flare and all diesel-fired piston internal combustion engines on the platform. Improperly maintained diesel engines have the potential to violate this rule. Compliance will be assured by requiring all engines to be maintained according to manufacturer maintenance schedules.

*Rule 305 - Particulate Matter, Southern Zone*: Platform Hillhouse is considered a Southern Zone source. This rule prohibits the discharge into the atmosphere from any source particulate matter in excess of specified concentrations measured in gr/scf. The maximum allowable concentrations are determined as a function of volumetric discharge, measured in scfm, and are listed in Table 305(a) of the rule. Sources subject to this rule include: the flare and all diesel-fired IC engines on the platform. Improperly maintained diesel engines have the potential to violate this rule. Compliance will be assured by requiring all engines to be maintained according to manufacturer maintenance schedules. Rule 359 addresses the need for the flare to operate in a smokeless fashion.

*Rule 309 - Specific Contaminants:* Under Section "A", no source may discharge sulfur compounds and combustion contaminants in excess of 0.2 percent as SO<sub>2</sub> (by volume) and 0.3 gr/scf (at 12% CO<sub>2</sub>) respectively. Sulfur emissions due to flaring of sweet gas will comply with the SO<sub>2</sub> limit. All diesel powered piston IC engines have the potential to exceed the combustion contaminant limit if not properly maintained (see discussion on Rule 305 above for compliance).

*Rule 310 - Odorous Organic Compounds:* This rule prohibits the discharge of H<sub>2</sub>S and organic sulfides that result in a ground level impact beyond the property boundary in excess of 0.06 ppmv averaged over 3 minutes or 0.03 ppmv averaged over 1 hour. No measured data exist to confirm compliance with this rule, however, all produced gas from Platform Hillhouse is sweet. As a result, it is expected that compliance with this rule will be achieved.

*Rule 311 - Sulfur Content of Fuels:* This rule limits the sulfur content of fuels combusted on Platform Hillhouse to 0.5 percent (by weight) for liquids fuels and 15 gr/100 scf (calculated as H<sub>2</sub>S) {or 239 ppmvd} for gaseous fuels. All piston IC engines on the platform and on the crew and supply boats are expected to be in compliance with the liquid fuel limit as determined by fuel analysis documentation. The flare relief system is not subject to this rule (see discussion under Rule 359).

*Rule 317 - Organic Solvents:* This rule sets specific prohibitions against the discharge of emissions ~~usage~~ of both photochemically and non-photochemically reactive organic solvents (40 lb/day and 3,000 lb/day respectively). Solvents may be used on the platform during normal operations for degreasing by wipe cleaning and for use in paints and coatings in maintenance operations. There is the potential to exceed the limits under Section B.2 during significant surface coating activities. Torch will be required to maintain records to ensure compliance with this rule.

*Rule 322 - Metal Surface Coating Thinner and Reducer:* This rule prohibits the use of photochemically reactive solvents for use as thinners or reducers in metal surface coatings. Torch will be required to maintain records during maintenance operations to ensure compliance with this rule.

*Rule 323 - Architectural Coatings:* This rule sets standards for the application of surface coatings. The primary coating standard that will apply to the platform is for Industrial Maintenance Coatings which has a limit of 340 gram ROC per liter of coating, as applied. Torch will be required to comply with the Administrative requirements under Section F for each container on the platform.

*Rule 324 - Disposal and Evaporation of Solvents:* This rule prohibits any source from disposing more than one and a half gallons of any photochemically reactive solvent per day by means that will allow the evaporation of the solvent into the atmosphere. Torch will be required to maintain records to ensure compliance with this rule.

*Rule 325 - Crude Oil Production and Separation:* This rule, applies to equipment used in the production, gathering, storage, processing and separation of crude oil and gas prior to custody transfer. The primary requirements of this rule are under Sections D and E. Section D requires the use of vapor recovery systems on all tanks and vessels, including waste water tanks, oil/water



separators and sumps. Section E requires that all produced gas be controlled at all times, except for wells undergoing routine maintenance. With the exception of the two portable tanks, production and test vessels and tanks are all connected to gas gathering systems and all relief valves are connected to the flare relief system. Torch has installed vapor recovery on all equipment subject to this rule. Torch has stated that the two portable tanks are exempted from Rule 325 per Section B.1.b, however this exemption only applies to new wells drilled and not existing wells. Compliance with this exemption will be verified by District inspections. Compliance with Section E is met by directing all produced gas to a sales compressor, injection well or to the flare relief system.

*Rule 328 - Continuous Emissions Monitoring:* This rule details the applicability and standards for the use of continuous emission monitoring systems ("CEMS"). Per Section B.2, the stationary source does emit into the atmosphere more than 5 lb/hr of non-methane hydrocarbons, oxides of nitrogen and sulfur oxides and more than 10 lb/hr of particulate matter. Process monitoring systems (e.g., fuel meters) are used to track emissions. There are no CEMs in use on the platform.

*Rule 330 - Surface Coating of Metal Parts and Products:* This rule sets standards for many types of coatings applied to metal parts and products. In addition to the ROC standards, this rule sets operating standards for application of the coatings, labeling and recordkeeping.

*Rule 331 - Fugitive Emissions Inspection and Maintenance:* This rule applies to components in liquid and gaseous hydrocarbon service at oil and gas production fields. Torch submitted an I&M Plan and received District approval of this Plan on July 15, 1994. Ongoing compliance with the many provisions of this rule will be assessed via platform inspection by District personnel using an organic vapor analyzer and through analysis of operator records. Platform Hillhouse does not perform any routine venting of hydrocarbons to the atmosphere. All gases routinely vented are directed to the flare relief system or vapor recovery system.

*Rule 333 - Control of Emissions from Reciprocating Internal Combustion Engines:* This rule applies to all engines with a rated brake horsepower of 50 or greater that are fueled by liquid or gaseous fuels. However, per Section B.1.b any engine exempt from the requirement to obtain a permit under Rule 202 is also exempt from this rule (see Section 3.1 above). Furthermore, the South pedestal crane engine is exempt per Section 333.B.2. The North diesel-fired pedestal crane engine on Platform Hillhouse is subject to the NO<sub>x</sub> standards under Section D.4 of 8.4 g/bhp-hr or 796 ppmvd (at 15% O<sub>2</sub>). Ongoing compliance is achieved through implementation of the District-approved Maintenance Plan (submitted on May 10, 1994 and approved on June 10, 1994) required under Section E and through biennial source testing (the source test in August, 1998 demonstrated compliance).

*Rule 359 - Flares and Thermal Oxidizers:* This rule applies to flares for both planned and unplanned flaring events. Compliance with this rule has been documented. A detailed review of compliance issues is as follows:

§ D.1 - Sulfur Content in Gaseous Fuels: Part (a) limits the total sulfur content of all planned flaring from South County flares to 15 gr/100 cubic feet (239 ppmv) calculated as H<sub>2</sub>S at standard conditions. Compliance with this rule is anticipated since the produced gas from Platform Hillhouse is sweet.

§ D.2 - Technology Based Standard: Requires all flares to be smokeless and sets pilot flame requirements. The flare on Platform Hillhouse is in compliance with this section.

§ D.3 - Flare Minimization Plan: This section requires sources to implement flare minimization procedures so as to reduce SO<sub>x</sub> emissions. Torch has fully implemented their Flare Minimization Plan.

*Rule 505 - Breakdown Conditions:* This rule describes the procedures that Torch must follow when a breakdown condition occurs to any emissions unit associated with Platform Hillhouse. A breakdown condition is defined as an unforeseeable failure or malfunction of (1) any air pollution control equipment or related operating equipment which causes a violation of an emission limitation or restriction prescribed in the District Rules and Regulations, or by State law, or (2) any in-stack continuous monitoring equipment, provided such failure or malfunction:

- a. Is not the result of neglect or disregard of any air pollution control law or rule or regulation;
- b. Is not the result of an intentional or negligent act or omission on the part of the owner or operator;
- c. Is not the result of improper maintenance;
- d. Does not constitute a nuisance as defined in Section 41700 of the Health and Safety Code;
- e. Is not a recurrent breakdown of the same equipment.

*Rule 603 - Emergency Episode Plans:* Section "A" of this rule requires the submittal of *Stationary Source Curtailment Plan* for all stationary sources that can be expected to emit more than 100 tons per year of hydrocarbons, nitrogen oxides, carbon monoxide or particulate matter. Torch submitted such a plan on July 23, 1994, and it was approved in November, 1994. It has been updated on November 30, 1998.

### **3.5 Compliance History**

This section contains a summary of the compliance history for this facility and was obtained from documentation contained in the APCD's Administrative file.

3.5.1 Variances: Torch has been operating under emergency order variances (HB Case No. 21-98R and 33-98R) to allow additional flaring and pigging caused by inspection/repair of sub-sea pipelines, as ordered by the MMS. The 'flaring' variance expires on December 31, 1998. Issuance of the proposed permit 9110 will make the 'pigging' variance unnecessary; it is the APCD's intent to request the Hearing Board to discontinue the pigging variance at that time.

3.5.2 Violations: Eight (8) Notices of Violations (NOVs) were issued to Nuevo/Torch since the original permit was issued:

*NOV No. 4969:* Violation of Rule 331. Issued 3/24/95. Specifically, repaired leaks were observed exceeding leak thresholds. Resolved Date: 8/21/1995.

*NOV No. 4970:* Violation of Rule 331. Issued 3/24/95. Specifically, leaks not repaired within the rule-stipulated time line. Resolved Date: 8/21/1995.

*NOV No. 5110:* Violation of Rule 322. Issued 7/25/95. Specifically, thinning paint with GP-2, a photochemically reactive solvent. Resolved Date: 8/10/1995

*NOV No. 5121: Violation of Rule 331. Issued 11/13/95. Specifically, the number leaks exceeded the number allowed in the "other" category by one. Resolved Date: 1/15/96*

*NOV No. 5130: Violation of Rule 331. Issued 3/27/96. Specifically, the number leaks exceeded the number allowed in the "other" category by one. Leak observed in the floatation cell unit. Resolved Date: 5/8/1996*

*NOV No. 5335: Violation of Rule 331. Issued 6/24/96. Specifically, the number leaks observed exceeded the number allowed. Resolved Date: 9/19/1996*

*NOV No. 5342: Violation of Rule 331. Issued 9/30/96. Specifically, the number leaks observed exceeded the number allowed; five hatches were found with leaks greater than 10,000 ppmv. Resolved Date: 3/26/1997.*

*NOV No. 5829: Violation of Rule 323. Issued on 3/31/98. Specifically, using paint with VOC content greater than that allowed by rule. Resolved Data: *Pending but expected to be resolved before draft permit issuance date.**

3.5.3 Significant Historical Hearing Board Actions/NOVs: There are no significant historical Hearing Board actions or NOVs.

Table 3.1 - Generic Federally-Enforceable APCD Rules

Generic Requirements	Affected Emission Units	Basis for Applicability
<u>RULE 101</u> : Compliance by Existing Installations	All emission units	Emission of pollutants
<u>RULE 102</u> : Definitions	All emission units	Emission of pollutants
<u>RULE 103</u> : Severability	All emission units	Emission of pollutants
<u>RULE 201</u> : Permits Required	All emission units	Emission of pollutants
<u>RULE 202</u> : Exemptions to Rule 201	Applicable emission units, as listed in form 1302-H of the Part 70 application	Insignificant activities/emissions, per size/rating/function
<u>RULE 203</u> : Transfer	All emission units	Change of ownership
<u>RULE 204</u> : Applications	All emission units	Addition of new equipment or modification to existing equipment.
<u>RULE 205</u> : Standards for Granting Permits	All emission units	Emission of pollutants
<u>RULE 206</u> : Conditional Approval of Authority to Construct or Permit to Operate	All emission units	Applicability of relevant Rules
<u>RULE 207</u> : Denial of Applications	All emission units	Applicability of relevant Rules
<u>RULE 208</u> : Action on Applications – Time Limits	All emission units. Not applicable to Part 70 permit applications.	Addition of new equipment or modification to existing equipment.
<u>RULE 212</u> : Emission Statements	All emission units	Administrative
<u>RULE 301</u> : Circumvention	All emission units	Any pollutant emission
<u>RULE 302</u> : Visible Emissions	All emission units	Particulate matter emissions
<u>RULE 305</u> : PM Concentration – South Zone	Each PM source	Emission of PM in effluent gas
<u>RULE 309</u> : Specific Contaminants	All emission units	Combustion contaminants
<u>RULE 310</u> : Odorous Org. Sulfides	All emission units	Emission of organic sulfides
<u>RULE 311</u> : Sulfur Content of Fuel	All combustion units	Use of fuel containing sulfur
<u>RULE 317</u> : Organic Solvents	Emission units using solvents	Solvent used in process operations.
<u>RULE 321</u> : Solvent Cleaning Operations	Emission units using solvents	Solvent used in process operations.
<u>RULE 322</u> : Metal Surface Coating Thinner and Reducer	Emission units using solvents	Solvent used in process operations.
<u>RULE 323</u> : Architectural Coatings	Paints used in maintenance and surface coating activities	Application of architectural coatings.
<u>RULE 324</u> : Disposal and Evaporation of Solvents	Emission units using solvents	Solvent used in process operations.
<u>RULE 505.A, B1, D</u> : Breakdown	All emission units	Breakdowns where permit limits are

Conditions		exceeded or rule requirements are not complied with.
<u>RULE 603</u> : Emergency Episode Plans	Stationary sources with PTE greater than 100 tpy	Nuevo – South County Offshore is a major source.
<u>REGULATION VIII</u> : New Source Review	All emission units	Addition of new equipment or modification to existing equipment. Applications to generate ERC Certificates.
<u>REGULATION XIII (RULES 1301-1305)</u> : Part 70 Operating Permits	All emission units	Nuevo – South County Offshore is a major source.

Table 3.2 - Unit-Specific Federally-Enforceable APCD Rules

Unit-Specific Requirements	Affected Emission Units	Basis for Applicability
<u>RULE 325</u> : Crude Oil Production and Separation	ID #'s 8005-22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32	All pre-custody production and processing emission units
<u>RULE 331</u> : Fugitive Emissions Inspection & Maintenance	All components (valves, flanges, seals, compressors and pumps) used to handle oil and gas : ID #'s 8005-7,8	Components emit fugitive ROCs.
<u>RULE 333</u> : Control of Emissions from Reciprocating IC Engines	Piston IC engines only; ID #s 8005-1,2,3	IC engines exceeding 100 bhp rating.
<u>RULE 359</u> : Flares and Thermal Oxidizers	Flare Relief System; ID # 8005-15	Flaring.

Table 3.3 - Non-Federally-Enforceable APCD Rules

Requirement	Affected Emission Units	Basis for Applicability
<u>RULE 210</u> : Fees	All emission units	Administrative
<u>RULE 303</u> : Nuisance	All emission units	Emissions that can injure, damage or offend.
<u>RULES 501-504</u> : Variance Rules	All emission units	Administrative
<u>RULE 505.B2, B3, C, E, F, G</u> : Breakdown Conditions	All emission units	Breakdowns where permit limits are exceeded or rule requirements are not complied with.
<u>RULES 506-519</u> : Variance Rules	All emission units	Administrative

Table 3.4 – Adoption Dates of APCD Rules Applicable at Issuance of Permit

Rule No.	Rule Name	Adoption Date
Rule 101	Compliance by Existing Installations: Conflicts	June 1981
Rule 102	Definitions	April 17, 1997
Rule 103	Severability	October 23, 1978
Rule 201	Permits Required	April 17, 1997
Rule 202	Exemptions to Rule 201	April 17, 1997
Rule 203	Transfer	April 17, 1997
Rule 204	Applications	April 17, 1997
Rule 205	Standards for Granting Permits	April 17, 1997
Rule 206	Conditional Approval of Authority to Construct or Permit to Operate	October 15, 1991
Rule 208	Action on Applications - Time Limits	April 17, 1997
Rule 212	Emission Statements	October 20, 1992
Rule 301	Circumvention	October 23, 1978
Rule 302	Visible Emissions	June 1981
Rule 305	Particulate Matter Concentration - Southern Zone	October 23, 1978

<b>Rule No.</b>	<b>Rule Name</b>	<b>Adoption Date</b>
Rule 309	Specific Contaminants	October 23, 1978
Rule 310	Odorous Organic Sulfides	October 23, 1978
Rule 311	Sulfur Content of Fuels	October 23, 1978
Rule 317	Organic Solvents	October 23, 1978
Rule 321	Solvent Cleaning Operations	September 18, 1997
Rule 322	Metal Surface Coating Thinner and Reducer	October 23, 1978
Rule 323	Architectural Coatings	July 18, 1996
Rule 324	Disposal and Evaporation of Solvents	October 23, 1978
Rule 325	Crude Oil Production and Separation	January 25, 1994
Rule 331	Fugitive Emissions Inspection and Maintenance	December 10, 1991
Rule 333	Control of Emissions from Reciprocating Internal Combustion Engines	April 17, 1997
Rule 359	Flares and Thermal Oxidizers	June 28, 1994
Rule 505	Breakdown Conditions (Section A, B1 and D)	October 23, 1978
Rule 603	Emergency Episode Plans	June 15, 1981
Reg. VIII	New Source Review Regulations (Rules 801-806)	April 17, 1997
Rule 901	New Source Performance Standards (NSPS)	May 16, 1996
Rule 903	Outer Continental Shelf (OCS) Regulations	November 10, 1992
Rule 1001	National Emission Standards for Hazardous Air Pollutants (NESHAPS)	October 23, 1993
Rule 1301	General Information	September 18, 1997
Rule 1302	Permit Application	November 9, 1993
Rule 1303	Permits	November 9, 1993
Rule 1304	Issuance, Renewal, Modification and Reopening	November 9, 1993
Rule 1305	Enforcement	November 9, 1993

## 4.0 Engineering Analysis

### 4.1 General

The engineering analyses performed for this permit were limited to the review of:

- ☞ facility process flow diagrams
- ☞ emission factors and calculation methods for each emissions unit
- ☞ emission control equipment (including RACT, BACT, NSPS, NESHAP, MACT)
- ☞ emission source testing, sampling, CEMS, CAM
- ☞ process monitors needed to ensure compliance

Unless noted otherwise, default ROC/THC reactivity profiles from the APCD's document titled "VOC/ROC Emission Factors and Reactivities for Common Source Types" dated 7/13/98 (ver. 1.1) was used to determine non-methane, non-ethane fraction of THC.

### 4.2 Stationary Combustion Sources

The stationary combustion sources associated with Platform Hillhouse consist of diesel-fired piston internal combustion engines and the flare relief system. Primary power on the platform is supplied by a subsea electric cable connected to the Southern California Edison electric grid.

*Piston Internal Combustion Engines:* All platform internal combustion engines are diesel-fuel fired. The "North" crane engine is subject to permit and Rule 333 requirements. The other stationary IC engines on the platform rated over 100-bhp are the "South" pedestal crane, one drilling generator, one emergency electrical generator, and an emergency fire pump. In addition to the drilling generator, temporary engines used to support drilling and well workover activities are expected to occur during the life of the platform. Applicability of permit requirements and associated controls for this temporary equipment will be determined according to the rules in effect at the time of use. Currently, most drilling and workover rig engines are not subject to permit and control requirements. The calculation methodology is similar for all stationary IC engines:

$$ER = [ ( EF \times BHP \times BSFC \times LCF \times HPP ) \times 10^6 ]$$

where:

ER =	emission rate (lb/period)
EF =	pollutant specific emission factor (lb/MMBtu)
BHP =	engine rated max brake-horsepower (bhp)
BSFC =	engine brake specific fuel consumption (Btu/bhp-hr)
LCF =	liquid fuel correction factor, LHV to HHV
HPP =	operating hours per time period (hrs/period)

The emission factor is an energy based value using the higher heating value (HHV) of the fuel. As such, an energy based BSFC value must also be based on the HHV. Manufacturer BSFC data are typically based on lower heating value (LHV) data and thus require a conversion (LCF) to the HHV basis. For diesel fuel oil, the HHV values are typically 6 percent greater than the corresponding LHV data. Volume or mass based BSFC data do not need any conversions.



*Crane Engines:* The North pedestal crane is driven by a Detroit Diesel Model 6V-71 engine rated at 238 bhp equipped with "B" type injectors. The use of these injectors coupled with the low operating loads allows this engine to comply with the Rule 333 NO<sub>x</sub> emission factor, 8.4 g/bhp-hr. A NO<sub>x</sub> emission factor of 2.40 lb/MMBtu is derived, based on a brake-specific fuel consumption (BSFC) from the manufacturer's specification of 7,272 Btu/bhp-hr. The emission factors for PM, CO and ROC are from USEPA AP-42, Table 3.3-1 (10/96), and the SO<sub>x</sub> emission factor is based on mass balance calculation.

The South pedestal crane is driven by a Detroit Diesel Model 3-71 engine rated at 109 bhp. This engine has B-type injectors. The drilling generator is powered by a 730 bhp Caterpillar Model D-348 engine with no controls. The emission factors for PM, CO and ROC are from USEPA AP-42, Table 3.3-1, and the SO<sub>x</sub> emission factor is based on mass balance calculation. The NO<sub>x</sub> emission factor of 2.26 lb./MMBtu listed in the OCS PTO 9114 is used for south crane engine.

The IC engines on the platform are not equipped with diesel fuel flow metering devices. All IC engines are equipped with non-resettable hour meters. The actual engine usage is logged each time the engine is fired. Emissions are calculated using total elapsed run time, the maximum rated engine bhp rating and BSFC data (from Table 5.1-1) to determine the number of gallons consumed per unit time. Ongoing compliance with Rule 333 will be accomplished by quarterly inspections per Section E of this rule and biennial source testing on the North pedestal crane engine.

*Flare Relief System:* The flare relief system consists of both a high and low pressure header that connects to various PSVs on production and test vessels, compressors, and glycol system. Both planned and unplanned flaring events occur. The flare itself is a Kaldair open pipe flare tip, model M-400. The design heat release is 2500 MMBtu/hr. Emission factors for NO<sub>x</sub>, CO and ROC are based on the USEPA AP-42, Table 11.5-1 (9/91). PM emission factors are based on a SBCAPCD flare study. Sulfur oxide emissions are based on mass balance calculations assuming both planned and pilot/purge sulfur levels at 239 ppmv and unplanned flaring sulfur levels at 239 ppmv. The emissions for both planned and unplanned flaring events are calculated. The SO<sub>x</sub> emission factor is determined using the equation: (0.169)(ppmv S)/(HHV). The calculation methodology for the flare is:

$$ER = [ ( EF \times SCFPP \times HHV ) \times 10^6 ]$$

where:      ER =            emission rate (lb/period)  
                  EF =            pollutant specific emission factor (lb/MMBtu)  
                  SCFPP =        gas flow rate per operating period (scf/period)  
                  HHV =            gas higher heating value (Btu/scf)

The flare header is equipped with a 10-inch Daniels orifice meter that is capable of detecting flow rates between 0.012 - 10.000 MMSCFD. The District and Torch have agreed on a low flow, or minimum, detection limit that is equivalent to 500 scfh (based on a velocity of 0.25 std ft/sec) which is higher than the purge/pilot flow rate of 135 scfh. As such, there is no practical method for assessing flow rates between 135 and 500 scfh. Therefore, based on USEPA and CARB's data reporting guidelines, a value of half the minimum detection limit is being assumed as "continuous" planned flaring.

### 4.3 Fugitive Hydrocarbon Sources

Emissions of reactive organic compounds from piping components such as valves, flanges and connections have been emission factors pursuant to APCD P&P 6100.061 (*Determination of Fugitive Hydrocarbon Emissions at Oil and Gas Facilities Through the Use of Facility Component Counts - Modified for Revised ROC Definition*). The component leak-path was counted consisted with P&P 6100.061. This leak-path count is not the same as the “component” count required by APCD Rule 331. Both gas/light liquid and oil side components are in service at this facility.

The number of emission leak-paths were determined by the operator and these data were verified by District staff by checking a representative number of P&IDs and by site checks. *Based on the data included in: (a) Torch's report to the APCD on 12/19/97, and (b) the ATC 9790 issued to Nuevo, Platform Hillhouse on 3/12/98*, a total of 8,278 oil/emulsion component leak-paths (updated from the previous count of 8281) and 10,057 gas/light-liquid component leak-paths (updated from the previous count of 9,116) exist on the platform. The calculation methodology for the fugitive emissions is:

$$ER = [(EF \times CLP \div 24) \times (1 - CE) \times (HPP)]$$

where: ER = emission rate (lb/period)  
EF = ROC emission factor (lb/clp-day)  
CLP = component leak-path (clp)  
CE = control efficiency  
HPP = operating hours per time period (hrs/period)

An emission control efficiency of 80 percent is credited to all components that are safe to monitor (as defined per Rule 331) due to the implementation of a District-approved Inspection and Maintenance program for leak detection and repair consistent with Rule 331 requirements. Unsafe to monitor components are not eligible for I&M control credit. Ongoing compliance is determined in the field by inspection with an organic vapor analyzer and verification of operator records.

Permitted fugitive ROC emissions from fugitive components increased by about six percent from the prior PTO, reflecting the interim addition of about 950 component leak paths, even though ethane was eliminated from the list of ROC's involved in any emissions.

### 4.4 Crew and Supply Vessels

Torch utilizes both crew boat and supply boats in support of Platform Hillhouse. For crew and supply boats, Torch has identified two types of vessels. One type is for primary usage and is controlled for NO<sub>x</sub>. The other type is normally uncontrolled for NO<sub>x</sub> and is used as a spot-charter. The crew boat spot-charter trips are limited to 10 percent of actual crew boat trips. The supply boat spot-charter trips are limited to 10 percent of actual supply boat trips.

The primary supply boat currently assigned to Platform Hillhouse is the *M/V Santa Cruz*. For all OCS sources, the typical time in mode for a trip to and from the platform is assumed to be approximately 11 hours (8 hours cruise, 2 hours maneuver, 1 hour idle). This time includes travel to and from the platform within a 25-mile radius. The *M/V Santa Cruz* is equipped with two-2,000 bhp (at 1600 rpm) main diesel-fired IC engines (CAT 3516B). These main engines employ the

following NO<sub>x</sub> control measures: A Dual Advanced Diesel Engine Management (ADEMII) modules with electronically controlled unit injectors, as well as dual turbo-chargers and a separate circuit after-cooler core. Additional diesel-fired engines on this boat include two-170 kW CAT 3306B DIT generator sets each powered by identical 245 bhp engines; and one bow thruster powered by a CAT 3408C DITA 510 bhp engine. The auxiliary engines are not controlled.

The crew boat assigned to Platform Hillhouse is the *Roff Tide*. This vessel is equipped with three-510 bhp main diesel-fired IC engines (Detroit Diesel model 12V-71TI). These engines employ the following NO<sub>x</sub> control measures: four-degree injection timing retard, turbo-charging, and inter-cooling. Additional diesel-fired engines on this vessel include two-30 kW auxiliary generators each powered by identical 109 bhp engines (Detroit Diesel model 3V-71). These auxiliary engines are not controlled. In addition, Torch may use the crew boat *Murdoch Tide*.

The permit assesses emission liability based solely on a single emission factor (the cruise mode with a load rating of 65 percent). The supply boat controlled engine has a NO<sub>x</sub> emission factor of 5.48 g/bhp-hr. This converts to a fuel-based NO<sub>x</sub> emission factor of 247 lb/1000 gallons of fuel, assuming a BSFC (engine efficiency number) value of 0.345-lb. fuel/bhp-hr. For crew boat engines with the controls listed above, a full load NO<sub>x</sub> emission factor of 8.4 g/bhp-hr (337 lb/1000 gallons) is used. Sulfur oxide emissions are based on mass balance calculations assuming 0.20 weight percent sulfur diesel fuel. Other boat main engine emission factors for ROC and CO are taken from USEPA, AP-42 (Volume II), updated to reflect the larger size of the engine(s). For the auxiliary and bow thruster engines, emission factors are taken from USEPA, AP-42 (Volume I). Uncontrolled NO<sub>x</sub> main engine emission factors for spot-charter supply boat usage are assumed to be 14 g/bhp-hr (561 lb/1000 gallons).

The calculation methodology for the crew and supply boat main engine emissions is:

$$ER = [(EF \times EHP \times BSFC \times EL \times TM) \div (10^3)]$$

<u>where:</u>	ER =	emission rate (lbs per period)
	EF =	full load pollutant specific emission factor (lb/1000 gallons)
	EHP =	engine max rated horsepower (bhp)
	BSFC =	engine brake specific fuel consumption (gal/bhp-hr)
	EL =	engine load factors (percent of max fuel consumption)
	TM =	time in mode (hours/period)

The calculations for the auxiliary engines are similar, except that a 50 percent engine load factor for the generators is utilized. Compliance with the main engine controlled emission rates shall be assessed through emission source testing. Ongoing compliance will be assessed through implementation of a District-approved Boat Monitoring and Reporting Plan. This Plan will be required to follow the District *Data Reporting Protocol for Crew and Supply Boat Activity Monitoring* document (dated June 21, 1991 and subsequent updates), wherever applicable. The requirements include: fuel usage meters on the main and auxiliary engines, a Global Positioning System (or equivalent location device) and a data gathering system, if appropriate. Alternative data collection and reporting methods that are equivalent in accuracy and reliability may be proposed by Torch as part of the Boat Monitoring and Reporting Plan [See permit condition 9.C.4(c)]. Total mileage from Platform Hillhouse to Port Hueneme is approximately 25 miles.

In addition, a permanently assigned emergency response vessel (i.e., the *Clean Seas II*) is associated with Platform Hillhouse. The total engine horsepower, including auxiliary engines, is 1,770 bhp. Emissions liability is assigned in a prorated fashion among the eleven OCS platforms that utilize the vessel off the Santa Barbara coast. Emission factors, calculations and compliance procedures are the same as for the spot-charter supply vessels discussed above. If used, other emergency response boat fuel usage (and resulting emissions) shall be assessed against this emissions category.

#### 4.5 Tanks/Vessels/Sumps/Separators

**Tanks:** Platform Hillhouse has two diesel fuel storage tanks. The diesel storage tanks service the various IC engines on the platform and are not controlled. Diesel tank emissions are very small and are assumed to be less than 0.10 tpy (200 lb/year). The detailed tank calculations for compliance will be performed using the methods presented in USEPA, AP-42, Chapter 7.

**Vessels:** Platform Hillhouse has several pressure vessels (e.g., production separators, test separators, treaters, and scrubbers). All PSVs, and blow down valves are connected to the flare relief system header. Emissions from pressure vessels are due to fugitive hydrocarbon leaks from valves and connections.

**Sumps:** There are two drain sumps (ABH-1212, ABH-1213) that recover oily liquids from the production deck and production equipment drains. Liquids collected in the drain sumps are pumped to a settling tank (MBF-1261), also located on the production deck. Two oil/water skim tanks {flotation Units}(ABM-1273, ABM-1277) process produced water from the treaters. Clean water from the flotation cell units is pumped to the flotation cell surge tank (ABM-1275). Two Baker Tanks are located on the production deck, a mud tank and a small drill water tank. All tanks and sumps are connected to either the vapor recovery system or the are vented to the flare. The sump tanks, settling tank, and flotation cell surge tank emissions are based on the CARB/KVB Report (*Emissions Characteristics of Crude Oil Production in California*, January 1983). These vessels are classified as being in secondary production and heavy oil service. The calculation is:

$$ER = [(EF \times SAREA \div 24) \times (1 - CE) \times (HPP)]$$

where:

ER =	emission rate (lb/period)
EF =	ROC emission factor (lb/ft <sup>2</sup> -day)
SAREA =	unit surface area (ft <sup>2</sup> )
CE =	control efficiency
HPP =	operating hours per time period (hrs/period)

**Oil/water separators:** Platform Hillhouse uses two oil/water separation units (flotation units) to process oily wastewater. An oil/water separator is defined as a class of waste water treatment equipment that processes known volumes of waste water on a continuous basis for treatment to remove entrained oil. The flotation cell units and the flotation cell surge tank are vented to the vapor recovery system. An uncontrolled emission factor of 560 lb ROC/MMgal of throughput from the CARB/KVB Report (*Emissions Characteristics of Crude Oil Production in California*, January 1983) is used to estimate emissions from each flotation cell unit. The control efficiency is, *assumed to be*, 95 percent. The calculation per time period is:

$$ER = (EF \times Q) \times (1 - CE)$$

where:

ER =	emission rate (lb/period)
EF =	ROC emission factor (lb/MMgallons/period)

Q = throughput (gallons/period)  
 CE = control efficiency

*Portable tanks:* Two 500 bbl. portable tanks are located on the platform on an as needed basis. They are used on an as-needed temporary basis for the following activities: handling crude oil fluids associated with the drilling of new wells only, consistent with the Rule 325.B.1.b exemption under which these tanks are allowed to operate without use of vapor recovery. Fugitive ROC emissions result from evaporative storage losses. Evaporative emissions from the Portable tanks are based on the CARB/KVB Report (*Emissions Characteristics of Crude Oil Production in California*, January 1983). These vessels are classified as being in secondary production and heavy oil service and are not vented to the vapor recovery system. The calculation is:

$$ER = [(EF \times SAREA \div 24) \times (1 - CE) \times (HPP)]$$

where: ER = emission rate (lb/period)  
 EF = ROC emission factor (lb/ft<sup>2</sup>-day)  
 SAREA = unit surface area (ft<sup>2</sup>)  
 HPP = operating period (period)

#### 4.6 Vapor Recovery Systems

In addition to emissions from sumps/waste water tanks, oil/water separators and pressure relief systems, low pressure gas from the treaters and surge vessels goes through a suction scrubber (MBF-1281) to remove entrained liquids and is then compressed to about 40 psig by the vapor recovery compressors (CAE-2201 and CAE-2202). Gas discharged from the vapor recovery compressor is combined with the gas from the separators and compressed by either the Ariel compressor or Worthington compressor. A control efficiency of 95 percent is assigned to the vapor recovery system, based on the APCD P&P 6100.030.92.

#### 4.7 Helicopters

Platform Hillhouse is equipped with a helipad, but helicopters are not used for routine transports.

#### 4.8 Other Emission Sources

The following is a brief discussion of other emission sources on Platform Hillhouse:

*Pigging:* Pipeline pigging operations occur on the platform. Both pig launching to Platform A and pig receiving from Platform Henry occurs. Emissions occur during the depressurization of these units, since a few pounds of back pressure remain in the chambers and ROC is emitted when chambers are opened to the atmosphere. Torch has stipulated in its 5/7/97 and 8/19/97 letters that the chambers are blanketed with sales gas before opening and the remaining pressure does not exceed 1 psig. The calculation per period is:

$$ER = [V_1 \times \rho \times wt \% \times EPP]$$

where: ER = emission rate (lb/period)  
 V<sub>1</sub> = volume of vessel (ft<sup>3</sup>)  
 ρ = density of vapor at actual conditions (lb/ft<sup>3</sup>)  
 wt % = weight percent ROC-TOC

EPP = pigging events per time period (events/period)

*General Solvent Cleaning/Degreasing:* Solvent usage (not used as thinners for surface coating) occurring on Platform Hillhouse as part of normal daily operations includes small cold solvent degreasing and wipe cleaning. Mass balance emission calculations are used assuming all the solvent used evaporates to the atmosphere.

*Surface Coating:* Surface coating operations typically include normal touch up activities. Entire platform painting programs are performed once every few years. Emissions are determined based on mass balance calculations assuming all solvents evaporate into the atmosphere. Emission of PM/PM<sub>10</sub> from paint overspray are not calculated due to the lack of established calculation techniques.

*Abrasive Blasting:* Abrasive blasting with CARB certified sands may be performed as a preparation step prior to surface coating. Particulate matter is emitted during this process. A general emission factor of 0.01 pound PM per pound of abrasive is used (SCAQMD - Permit Processing Manual, 1989) to estimate emissions of PM and PM<sub>10</sub> when needed for compliance evaluations. A PM/PM<sub>10</sub> ratio of 1.0 is assumed.

#### **4.9 BACT/NSPS/NESHAP/MACT**

Except as described below, none of the emission units at Platform Hillhouse are subject to best available control technology (BACT), NSPS or NESHAP provisions. MACT provisions have yet to be promulgated. Pursuant to Rule 331.E.1.b, all leaks from critical components are required to be replaced with BACT in accordance with the APCD's NSR rule. On April 17, 1995, a critical Fisher 4" control valve (Tag # 96667) was found leaking. BACT, as defined in Table 4.2 was installed on June 8, 1997. Retrofitting the valve with a new stem, bonnet re-sleeving and installing "Enviro-Seal" packing, O-rings, and gaskets were accepted as BACT.

#### **4.10 CEMS/Process Monitoring/CAM**

4.10.1 CEMS: There are no CEMS at this facility.

4.10.2 Process Monitoring: In many instances, ongoing compliance beyond a single (snap shot) source test is assessed by the use of process monitoring systems. Examples of these monitors include: engine hour meters, fuel usage meters, water injection mass flow meters, flare gas flow meters and hydrogen sulfide analyzers. Once these process monitors are in place, it is important that they be well maintained and calibrated to ensure that the required accuracy and precision of the devices are within specifications. At a minimum, the following process monitors will be required to be calibrated and maintained in good working order:

- Crew Boat Diesel Fuel Meters (main and auxiliary engines, *as applicable*)
- Supply Boat Diesel Fuel Meters (main and auxiliary/bow thruster engines, *as applicable*)
- Flare Header Flow Meter
- Hour Meters (cranes, emergency generator)

To implement the above calibration and maintenance requirements, a *Process Monitor Calibration and Maintenance Plan* was required of Torch. This Plan takes into consideration manufacturer recommended maintenance and calibration schedules. Where manufacturer guidance is not

available, the recommendations of comparable equipment manufacturers and good engineering judgement is be utilized.

- 4.10.3 **CAM:** Nuevo South County Offshore is a major source that is subject to the USEPA's Compliance Assurance Monitoring (CAM) rule (40 CFR 64). Any emissions unit at the facility with uncontrolled emissions potential exceeding major source emission thresholds for any pollutant is subject to CAM provisions. Torch must submit a Part 64 monitoring plan to the APCD at the time of their first renewal of this Part 70 permit, if applicable to the stationary source. They may also be required to submit such a plan, if applicable, if this permit is reopened because of a significant permit revision.

#### **4.11 Source Testing/Sampling**

Source testing and sampling are required in order to ensure compliance with permitted emission limits, prohibitory rules, control measures and the assumptions that form the basis of this operating permit. Table 4.1 details the pollutants, test methods and frequency of required testing. Torch will be required to follow the District *Source Test Procedures Manual* (May 24, 1990 and all updates). The following emission units are required to be source tested.

- North Crane Engine
- Supply Boat Main Engines
- Crew Boat Main Engines

At a minimum, the process streams below are required to be sampled and analyzed.

- Produced Gas: Sample taken at production separator outlet. Analysis for: HHV, total sulfur, hydrogen sulfide, composition. Samples to be taken on an annual basis.
- Produced Oil: Sample taken at outlet from production separator. Analysis for: API gravity; true vapor pressure (per Rule 325 methods). Samples to be taken on a biennial basis.

All sampling and analyses are required to be performed according to APCD approved procedures and methodologies. Typically, the appropriate ASTM methods are acceptable. However, TVP sampling methods for liquids with an API gravity under 20<sup>0</sup> require specialized procedures. It is important that all sampling and analysis be traceable by chain of custody procedures.

---

**TABLE 4.1 - SOURCE TEST REQUIREMENTS**

<u>Emission Points</u>	<u>Pollutants/ Parameters</u>	<u>Test Methods</u>	<u>Allowable exhst. concntr.</u>
- Crane Engine (North) - Crew Boat Main Engines - Supply Boat Main Engines	NO <sub>x</sub> (ppmv, lb/hr)	CARB 1-100 or USEPA 7E	797 ppm @ 15% O <sub>2</sub>
	CO (ppmv, lb/hr)	CARB 1-100 or USEPA 10	
	ROC (ppmv, lb/hr)	USEPA 18	
	Fuel Flow Rate	Fuel Meter for Boats, Day Tank Level for Cranes	
	Fuel High Heating Value	ASTM	
	Total S Content	ASTM	

Site Specific Requirements

- a. All emissions tests to consist of three 40-minute runs. Crane engine tests to consist of three 20-minute runs. Crane engine to be tested at safe maximum load. Crew and supply boat main engines to be tested at cruise load. Crew boat test runs may be shortened if the boat is used on normal trips to/from the platform. Additional testing may be required if loads are not achieved.
  - b. The specific project crew and supply boat to be tested shall be determined by the APCD.
  - c. USEPA methods 1-4 to be used to determine O<sub>2</sub>, dry MW, moisture content, CO<sub>2</sub>, and stack flow rate. Alternatively, USEPA 19 may be used to determine flow rate for NO<sub>x</sub> emission rate purpose.
  - d. SO<sub>x</sub> emissions to be determined by mass balance calculation.
  - e. The main engines from one crew and one supply boat shall be tested annually. The crane engine shall be tested biennially.
  - f. Procedures to obtain the required operating loads shall be clearly defined in the source test plan.
-



**TABLE 4.2 – BACT REQUIREMENTS**

<b>Component</b>	<b>Technology</b>	<b>Performance Standard</b>
4" Fisher Valve: ID No. 96667	a. Retrofitting valve with new stem; b. Re-sleeving the bonnet; c. Installing "Enviro-Seal" packing, O-rings and gaskets.	500 ppm as methane above ambient, monitored per EPA Reference Method 21.

## 5.0 Emissions

### 5.1 General

Current ATC/PTO Mod 9114-02 (Crew and supply boat permitted emission and operation limits) and ATC/PTO 9790 (Well bay modification including gas header installation) are combined in this PTO 9114. All provisions in these permits were analyzed to determine the permit conditions of PTO 9114, including the permitted emission limits of criteria pollutants from all applicable emission units.

Emissions calculations are divided into "permitted" and "exempt" categories. Permit exempt equipment is determined by APCD Rule 202. The permitted emissions for each emissions unit is based on the equipment's potential-to-emit (as defined by Rule 102). Section 5.2 details the permitted emissions for each emissions unit. Section 5.3 details the overall permitted emissions for the facility based on reasonable worst-case scenarios using the potential-to-emit for each emissions unit. Section 5.4 provides the federal potential to emit calculation using the definition of potential to emit used in Rule 1301. Section 5.5 provides the estimated HAP emissions from Platform Hillhouse. Section 5.6 provides the estimated emissions from permit exempt equipment and also serves as the Part 70 list of insignificant emission. Section 5.7 provides the net emissions increase calculation for the facility and the stationary source. In order to accurately track the emissions from a facility, the APCD uses a computer database. Attachment 10.4 contains the APCD's documentation for the information entered into that database.

### 5.2 Permitted Emission Limits - Emission Units

Each emissions unit associated with the facility was analyzed to determine the potential-to-emit for the following pollutants:

- ⇒ Nitrogen Oxides (NO<sub>x</sub>)<sup>3</sup>
- ⇒ Reactive Organic Compounds (ROC)
- ⇒ Carbon Monoxide (CO)
- ⇒ Sulfur Oxides (SO<sub>x</sub>)<sup>4</sup>
- ⇒ Particulate Matter (PM)<sup>5</sup>
- ⇒ Particulate Matter smaller than 10 microns (PM<sub>10</sub>)

Permitted emissions are calculated for both short term (hourly and daily) and long term (quarterly and annual) time periods. Section 4.0 (Engineering Analysis) provides a general discussion of the basic calculation methodologies and emission factors used. The reference documentation for the specific emission calculations, as well as detailed calculation spreadsheets, may be found in Section 4 and Attachments 10.1 and 10.2 respectively. Table 5.1-1 provides the basic operating characteristics. Table 5.1-2 provides the specific emission factors. Tables 5.1-3 and 5.1-4 shows the permitted short-term and permitted long-term emissions for each unit or operation. In the table,

---

<sup>3</sup> Calculated and reported as nitrogen dioxide (NO<sub>2</sub>)

<sup>4</sup> Calculated and reported as sulfur dioxide (SO<sub>2</sub>)

<sup>5</sup> Calculated and reported as all particulate matter smaller than 100 µm

the last column indicates whether the emission limits are federally enforceable. Those emissions limits that are federally enforceable are indicated by the symbol "FE". Those emissions limits that are APCD-only enforceable are indicated by the symbol "A".

### **5.3 Permitted Emission Limits - Facility Totals**

The total potential-to-emit for all emission units associated with the facility was analyzed. This analysis looked at the reasonable worst-case operating scenarios for each operating period. The equipment operating in each of the scenarios are presented below. Unless otherwise specified, the operating characteristics defined in Table 5.1-1 for each emission unit are assumed. Table 5.2 shows the total permitted emissions for the facility.

#### Hourly and Daily Scenario:

- Both "North" and "South" pedestal crane engines
- Flare purge and pilot
- Planned continuous flaring
- Spot charter supply boat
  - Main engines operating at cruise mode
  - Generator engines on supply boat provide half of maximum engine rating
  - Bow thruster on supply boat does not operate during peak hour
- Controlled crew boat
  - Main engines operating at cruise mode
  - Generator engines on crew boat provide half of maximum engine rating
- Fugitive components
- Oil pig launcher
- Waste oil sump
- Flotation cell unit
- Skimmer tank
- Waste water tank
- Solvent usage
- Portable tanks (2x)

#### Quarterly and Annual Scenario:

- Both "North" and "South" pedestal crane engines
- Flare purge and pilot
- Planned continuous flaring
- Planned intermittent (other) flaring
- Unplanned flaring
- Controlled and Uncontrolled supply boat
  - Main engines operating at cruise mode
  - Generator engines on supply boat provide half of maximum engine rating
  - Bow thruster
- Controlled and Uncontrolled crew boat
  - Main engines operating at cruise mode
  - Auxiliary engines on crew boat provide half of maximum engine rating
- Fugitive components

- Pig launchers and receivers
- Waste oil sump
- Flotation cell unit
- Skimmer tank
- Waste water tank
- Solvent usage
- Portable tanks (2x)

#### **5.4 Part 70: Federal Potential to Emit for the Facility**

Table 5.3 lists the federal Part 70 potential to emit. Being subject to the OCS Air Regulation, all project emissions, except fugitive emissions, are counted in the federal definition of potential to emit. However, fugitives are counted in the Federal PTE if the facility is subject to any applicable NSPS or NESHAP requirement.

#### **5.5 Exempt Emission Sources/Part 70 Insignificant Emissions**

Equipment/activities exempt pursuant to Rule 202 include maintenance operations involving surface coating. Under the APCD's Part 70 regulation, equipment/activities that are exempt under Rule 202 are considered insignificant units emissions. In addition, *insignificant activities* such as maintenance operations using paints and coatings, contribute to the facility emissions. Table 5.4 list these exempt emissions units and the expected emissions. These are emission estimates only. They are not limitations.

#### **5.6 Net Emissions Increase Calculation**

This facility's net emissions increase since November 15, 1990 (the day the federal Clean Air Act Amendments was adopted in 1990) is based on the following NSR permit actions since December 5, 1991:

- ATC/PTO 9790 Issued in (3/12/1998): ROC NEI of 13.76 lbs./day, 2.51 tons/year.

The NEI for Platform Hillhouse is shown in Table 5.5 and in Table 5 of Attachment 10.4.

Table 5.1-1

Table 5.1-2

Table 5.1-3

Table 5.1-4



Table 5.2

Table 5.3

Table 5.4

Table 5.5

## **6.0 Air Quality Impact Analyses**

### **6.1 *Modeling***

Air quality modeling was not required for this stationary source.

### **6.2 *Increments***

An air quality increment analysis was not required for this stationary source

### **6.3 *Monitoring***

Air quality monitoring is not required for this stationary source.

### **6.4 *Health Risk Assessment***

A Health Risk Assessment was not required for this stationary source.

## **7.0 CAP Consistency, Offset Requirements and ERCs**

### **7.1 General**

The Nuevo South County Offshore stationary source is located in an ozone nonattainment area. Santa Barbara County is nonattainment for both the federal and state ozone ambient air quality standards. In addition, the County is nonattainment with the state PM<sub>10</sub> ambient air quality standard. Therefore, emissions from all emission units at the stationary source and its constituent facilities must be consistent with the provisions of the USEPA and State approved Clean Air Plans (CAP) and must not interfere with progress towards attainment of federal and state ambient air quality standards. Under APCD regulations, any modifications at Platform Hillhouse (or the Nuevo South County Offshore source) that result in an emissions increase of any nonattainment pollutant exceeding 25 lbs/day must apply BACT (NAR). Additional increases may trigger offsets at the source or elsewhere so that there is a net air quality benefit for Santa Barbara County. These offset threshold levels are 55 lbs/day for all non-attainment pollutants except PM<sub>10</sub> for which the level is 80 lbs/day.

### **7.2 Clean Air Plan**

Santa Barbara County does not meet the current hourly federal ambient ozone standard of 0.12 ppm or the state hourly ambient ozone standard of 0.09 ppm. The APCD has submitted the 1998 Clean Air Plan (Final, 12/98) to the USEPA through the State of California Air Resources Board. The 1998 CAP, if approved by the USEPA, will be incorporated into the California State Implementation Plan (SIP). The CAP demonstrates a Rate-of-Progress and how the county will attain the ambient ozone standards by 1999 through the application of emission controls on all pollution sources.

### **7.3 Offset Requirements**

The Nuevo South County Offshore stationary source does not currently require emission offsets.

### **7.4 Emission Reduction Credits**

The Nuevo South County Offshore stationary source does not generate or provide emission reduction credits.

## **8.0 Lead Agency Permit Consistency**

The United States Department of Interior's Minerals Management Service approved the *Plan of Development* for Torch's operation of Platform Hillhouse on July 2, 1991. The platform *installation* had previously been approved by the MMS in the 1960's under a previous operator.

## 9.0 Permit Conditions

This section lists the applicable permit conditions for Platform Hillhouse. Section A lists the standard administrative conditions. Section B lists 'generic' permit conditions, including emission standards, for all equipment in this permit. Section C lists conditions affecting specific equipment. Section D lists non-federally enforceable (i.e., APCD only) permit conditions. Conditions listed in Sections A, B and C are enforceable by the USEPA, the APCD, the State of California and the public. Conditions listed in Section D are enforceable only by the APCD and the State of California. Where any reference contained in Sections 9.A, 9.B or 9.C refers to any other part of this permit, that part of the permit referred to is federally enforceable. In case of a discrepancy between the wording of a condition and the applicable federal or APCD rule(s), the wording of the rule shall control.

### 9.A Standard Administrative Conditions

The following federally-enforceable administrative permit conditions apply to Platform Hillhouse:

- A.1 **Condition Acceptance.** Acceptance of this operating permit by Torch shall be considered as acceptance of all terms, conditions, and limits of this permit. [*Re: PTO 9114*]
- A.2 **Grounds for Revocation.** Failure to abide by and faithfully comply with this permit shall constitute grounds for the APCO to petition for permit revocation pursuant to California Health & Safety Code Section 42307 *et seq.* [*Re: PTO 9114*]
- A.3 **Defense of Permit.** Torch agrees, as a condition of the issuance and use of this PTO, to defend at its sole expense any action brought against the District because of issuance of this permit. Torch shall reimburse the District for any and all costs including, but not limited to, court costs and attorney's fees which the District may be required by a court to pay as a result of such action. The District may, at its sole discretion, participate in the defense of any such action, but such participation shall not relieve Torch of its obligation under this condition. The District shall bear its own expenses for its participation in the action. [*Re: PTO 9114*]
- A.4 **Reimbursement of Costs.** All reasonable expenses, as defined in APCD Rule 210, incurred by the APCD, APCD contractors, and legal counsel for all activities related to the implementation of Regulation XIII (*Part 70 Operating Permits*) that follow the issuance of this PTO permit, including but not limited to permit condition implementation, compliance verification and emergency response, directly and necessarily related to enforcement of the permit shall be reimbursed by Torch as required by Rule 210. [*Re: PTO 9114, APCD Rule 210*]
- A.5 **Access to Records and Facilities.** As to any condition that requires for its effective enforcement the inspection of records or facilities by the District or its agents, Torch shall make such records available or provide access to such facilities upon notice from the District. Access shall mean access consistent with California Health and Safety Code Section 41510 and Clean Air Act Section 114A. [*Re: PTO 9114*]
- A.6 **Compliance.** Nothing contained within this permit shall be construed to allow the violation of any local, State or Federal rule, regulation, ambient air quality standard or air quality increment. [*Re: PTO 9114*]

- A.7 **Consistency with Analysis.** Operation under this permit shall be conducted consistent with all data, specifications and assumptions included with the application and supplements thereof (as documented in the District's project file) and the District's analyses under which this permit is issued. [Re: PTO 9114]
- A.8 **Consistency with State and Local Permits.** Nothing in this permit shall relax any air pollution control requirement imposed on the Platform Hillhouse by the State of California or the California Coastal Commission in any consistency determination for the Project with the California Coastal Act. [Re: PTO 9114]
- A.9 **Compliance with Department of Interior Permits.** Torch shall comply with all air quality control requirements imposed by the Department of the Interior in the *Plan of Development* approved for Platform Hillhouse on July 2, 1991, and any subsequent modifications. Such requirements shall be enforceable by the District. [Re: PTO 9114]
- A.10 **Compliance with Permit Conditions.**
- (a) Torch shall comply with all permit conditions in Sections 9.A, 9.B and 9.C.
  - (b) This permit does not convey property rights or exclusive privilege of any sort.
  - (c) Any permit noncompliance with sections 9.A, 9.B, or 9.C constitutes a violation of the Clean Air Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application
  - (d) It shall not be a defense for Torch in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
  - (e) A pending permit action or notification of anticipated noncompliance does not stay any permit condition.
  - (f) Within a reasonable time period, Torch shall furnish any information requested by the Control Officer, in writing, for the purpose of determining:
    - (i) compliance with the permit, or
    - (ii) whether or not cause exists to modify, revoke and reissue, or terminate a permit or for an enforcement action.
  - (g) In the event that any condition herein is determined to be in conflict with any other condition contained herein, then, if principles of law do not provide to the contrary, the condition most protective of air quality and public health and safety shall prevail to the extent feasible.  
[Re: 40 CFR Part 70.6.(a)(6), APCD Rules 1303.D.1]
- A.11 **Emergency Provisions.** Torch shall comply with the requirements of the APCD, Rule 505 (Upset/Breakdown rule) and/or APCD Rule 1303.F, whichever is applicable to the emergency situation. In order to maintain an affirmative defense under Rule 1303.F, Torch shall provide the APCD, in writing, a "notice of emergency" within 2 working days of the emergency. The "notice



of emergency” shall contain the information/documentation listed in Sections (1) through (5) of Rule 1303.F. [Re: 40 CFR 70.6(g), APCD Rule 1303.F ]

A.12 **Compliance Plan.**

- (a) Torch shall comply with all federally enforceable requirements that become applicable during the permit term in a timely manner.
- (b) For all applicable equipment, Torch shall implement and comply with any specific compliance plan required under any federally-enforceable rules or standards.  
[Re: APCD Rule 1302.D.2]

A.13 **Right of Entry.** The Regional Administrator of USEPA, the Control Officer, or their authorized representatives, upon the presentation of credentials, shall be permitted to enter upon the premises where a Part 70 Source is located or where records must be kept:

- (a) To inspect the stationary source, including monitoring and control equipment, work practices, operations, and emission-related activity;
- (b) To inspect and duplicate, at reasonable times, records required by this Permit to Operate;
- (c) To sample substances or monitor emissions from the source or assess other parameters to assure compliance with the permit or applicable requirements, at reasonable times. Monitoring of emissions can include source testing.

[Re: APCD Rule 1303.D.2]

A.14 **Severability.** The provisions of this Permit to Operate are severable and if any provision of this Permit to Operate is held invalid, the remainder of this Permit to Operate shall not be affected thereby. [Re: APCD Rules 103 and 1303.D.1]

A.15 **Permit Life.** The Part 70 permit shall become invalid five years from the date of issuance unless a timely and complete renewal application is submitted to the APCD. Any operation of the source to which this Part 70 permit is issued beyond the expiration date of this Part 70 permit and without a valid Part 70 operating permit (or a complete Part 70 permit renewal application) shall be a violation of the CAAA, § 502(a) and 503(d) and of the APCD rules.

Torch shall apply for renewal of the Part 70 permit no earlier than 18 months and not later than 6 months before the date of the permit expiration. Upon submittal of a timely and complete renewal application, the Part 70 permit shall remain in effect until the Control Officer issues or denies the renewal application. [Re: APCD Rule 1304.D.1]

A.16 **Payment of Fees.** Torch shall reimburse the APCD for all its Part 70 permit processing and compliance expenses for the stationary source on a timely basis. Failure to reimburse on a timely basis shall be a violation of this permit and of applicable requirements and can result in forfeiture of the Part 70 permit. Operation without a Part 70 permit subjects the source to potential enforcement action by the APCD and the USEPA pursuant to section 502(a) of the Clean Air Act. [Re: APCD Rules 1303.D.1 and 1304.D.11, 40 CFR 70.6(a)(7)]

A.17 **Prompt Reporting of Deviations.** Torch shall submit a written report to the APCD documenting each and every deviation from the requirements of this permit or any applicable federal

requirements within 7 days after discovery of the violation, but not later than 30 days after the date of occurrence. The report shall clearly document 1) the probable cause and extent of the deviation 2) equipment involved, 3) the quantity of excess pollutant emissions, if any, and 4) actions taken to correct the deviation. The requirements of this condition shall not apply to deviations reported to APCD in accordance with Rule 505. *Breakdown Conditions*, or Rule 1303.F *Emergency Provisions*. [APCD Rule 1303.D.1, 40 CFR 70.6(a) (3)]

**A.18 Reporting Requirements.**

**Reporting Requirements/Compliance Certification.** Torch shall submit compliance certification reports to the USEPA and the Control Officer every six months. These reports shall be submitted on APCD forms and shall identify each applicable requirement/condition of the permit, the compliance status with each requirement/condition, the monitoring methods used to determine compliance, whether the compliance was continuous or intermittent, and include detailed information on the occurrence and correction of any deviations (excluding emergency upsets) from permit requirement. The reporting periods shall be each half of the calendar year, e.g., January through June for the first half of the year. These reports shall be submitted by September 1 and March 1, respectively, each year. Supporting monitoring data shall be submitted in accordance with the “Semi-Annual Monitoring/Compliance Verification Report” condition in section 9.C. Torch shall include a written statement from the responsible official, which certifies the truth, accuracy, and completeness of the reports. [Re: *APCD Rules 1303.D.1, 1302.D.3, 1303.2.c*]

**A.19 Federally-enforceable Conditions.** Each federally enforceable condition in this permit shall be enforceable by the USEPA and members of the public. None of the conditions in the APCD-only enforceable section of this permit are federally enforceable or subject to the public/USEPA review [Re: *CAAA, § 502(b)(6), 40 CFR 70.6(b)*]

**A.20 Recordkeeping Requirements.** Torch shall maintain records of required monitoring information that include the following:

- (a) The date, place as defined in the permit, and time of sampling or measurements;
- (b) The date(s) analyses were performed;
- (c) The company or entity that performed the analyses;
- (d) The analytical techniques or methods used;
- (e) The results of such analyses; and
- (f) The operating conditions as existing at the time of sampling or measurement;

The records (electronic or hard copy), as well as all supporting information including calibration and maintenance records, shall be maintained for a minimum of five (5) years from date of initial entry by Torch and shall be made available to the APCD upon request. . [Re: *APCD Rule 1303.D.1.f, 40 CFR 70.6(a)(3)(ii)(A)*]

**A.21 Conditions for Permit Reopening.** The permit shall be reopened and revised for cause under any of the following circumstances:

- (a) Additional Requirements: If additional applicable requirements (e.g., NSPS or MACT) become applicable to the source which has an unexpired permit term of three (3) or more years, the permit shall be reopened. Such a reopening shall be completed no later than 18 months after promulgation of the applicable requirement. However, no such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions has been extended. All such re-openings shall be initiated only after a 30 day notice of intent to reopen the

permit has been provided to Torch, except that a shorter notice may be given in case of an emergency.

- (b) Inaccurate Permit Provisions: If the APCD or the USEPA determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emission standards or other terms or conditions of the permit, the permit shall be reopened. Such re-openings shall be made as soon as practicable.
- (c) Applicable Requirement: If the APCD or the USEPA determines that the permit must be revised or revoked to assure compliance with any applicable requirement including a federally enforceable requirement, the permit shall be reopened. Such re-openings shall be made as soon as practicable.

Administrative procedures to reopen and revise/revoke/reissue a permit shall follow the same procedures as apply to initial permit issuance. Re-openings shall affect only those parts of the permit for which cause to reopen exists. If the permit is reopened, and revised, it will be reissued with the expiration date that was listed in the permit before the re-opening.

[Re: 40 CFR 70.7(f), 40 CFR 70.6(a)]

- A.22 **Oil & Natural Gas Production MACT – Applicability Notification.** Torch will submit to the USEPA its ‘Initial Notice of Applicability’ of 40 CFR 63: *Subpart HH, (Oil & Gas Production MACT)*, prior to June 17, 2000; and, will comply with the requirements of this Subpart, if it is applicable, by 6/17/2002.

[Re: 40 CFR 63, Subpart HH]

- A.23 **Credible Evidence.** For the purposes of submitting compliance certifications or establishing whether or not a person has violated or is in violation of any standard in this permit, nothing in the permit shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test had been performed.

[ Ref: CAAA, Section 113(a)]

## **9.B. Generic Conditions**

The generic conditions listed below apply to all emission units, regardless of their category or emission rates. These conditions are federally enforceable. Compliance with these requirements is discussed in Section 3. In case of a discrepancy between the wording of a condition and the applicable federal or APCD rule(s), the wording of the rule shall control.

- B.1 **Circumvention (Rule 301).** A person shall not build, erect, install, or use any article, machine, equipment or other contrivance, the use of which, without resulting in a reduction in the total release of air contaminants to the atmosphere, reduces or conceals an emission which would otherwise constitute a violation of Division 26 (Air Resources) of the Health and Safety Code of the State of California or of these Rules and Regulations. This Rule shall not apply to cases in which the only violation involved is of Section 41700 of the Health and Safety Code of the State of California, or of APCD Rule 303. [Re: APCD Rule 301]

- B.2 **Visible Emissions (Rule 302).** Torch shall not discharge into the atmosphere from any single source of emission any air contaminants for a period or periods aggregating more than three minutes in any one hour which is:

- (a) As dark or darker in shade as that designated as No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines, or

- (b) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subsection B.2.(a) above.

Compliance shall be determined by APCD staff certified in visual emission evaluations. [Re: APCD Rule 302].

- B.3 **PM Concentration - South Zone (Rule 305).** Torch shall not discharge into the atmosphere, from any source, particulate matter in excess of the concentrations listed in Table 305(a) of Rule 305. [Re: APCD Rule 305]
- B.4 **Specific Contaminants (Rule 309).** Torch shall not discharge into the atmosphere from any single emission source sulfur compounds, carbon monoxide and combustion contaminants in excess of the applicable standards listed in Sections A, E and G of Rule 309. [Re: APCD Rule 309].
- B.5 **Odorous Organic Sulfides (Rule 310).** Torch shall not discharge into atmosphere H<sub>2</sub>S and organic sulfides that result in a ground level impact beyond the Torch property boundary in excess of 0.06 ppmv averaged over 3 minutes or 0.03 ppmv averaged over 1 hour. [Re: APCD Rule 310]
- B.6 **Sulfur Content of Fuels (Rule 311).** Torch shall not burn fuels with a sulfur content in excess of 0.5% (by weight) for liquid fuels and 239 ppmvd or 15 gr/100 scf (calculated as H<sub>2</sub>S) for gaseous fuel. Compliance with this condition shall be based on *annual* measurements of the H<sub>2</sub>S in fuel gas using (Draeger tubes, ASTM, or other APCD-approved) methods and diesel fuel billing records or other data showing the certified sulfur content for each shipment. [Re: APCD Rule 311]. *Torch must also provide data to the APCD showing the sulfur content of its produced gas during 1998 and 1999, as obtained periodically by Torch and showing less than 4 ppm H<sub>2</sub>S content.*
- B.7 **Organic Solvents (Rule 317).** Torch shall comply with the emission standards listed in Section B of Rule 317. Compliance with this condition shall be based on Torch's compliance with Condition C.7 of this permit. [Re: APCD Rule 317]
- B.8 **Metal Surface Coating Thinner and Reducer (Rule 322).** The use of photochemically reactive solvents as thinners or reducers in metal surface coatings is prohibited. Compliance with this condition shall be based on Torch's compliance with Condition C.7 of this permit and facility inspections. [Re: APCD Rule 322]
- B.9 **Architectural Coatings (Rule 323).** Torch shall comply with the coating VOC content and handling standards listed in Section D of Rule 323 as well as the Administrative requirements listed in Section F of Rule 323. Compliance with this condition shall be based on Torch's compliance with Condition C.7 of this permit and facility inspections. [Re: APCD Rules 323, 317, 322, 324]
- B.10. **Disposal and Evaporation of Solvents (Rule 324).** Torch shall not dispose through atmospheric evaporation of more than one and a half gallons of any photochemically reactive solvent per day. Compliance with this condition shall be based on Torch's compliance with Condition C.7 of this permit and facility inspections [Re: APCD Rule 324].
- B.11 **Equipment Replacements.** Pursuant to Rule 202.D.9, a permit shall not be required for equivalent routine replacement in whole or in part of any equipment where a Permit to Operate had previously been granted under Rule 201, providing emissions are not increased and there is no potential for violating any ambient air quality standard. An equivalent piece of equipment has a Potential to Emit, operating design capacity or actual demonstrated capacity less than or equal to that of the original piece of equipment, and is subject to the same limitations and permit conditions as the equipment being replaced. The owner or operator shall notify the District within 30 days of an equivalent routine replacement, unless the replacement equipment is identical as to make and model, and routine in which case notification is not required. This provision shall not grant any exemption from New Source Performance Standards.

## 9.C Equipment Specific Conditions

This section includes non generic federally-enforceable conditions. Conditions for emissions and operations limits; monitoring, recordkeeping and reporting are included in this section for each specific equipment group. This section may also contain other non-generic conditions.

### C.1 Internal Combustion Engines. The following equipment are included in this emissions unit category:

ID No.	Name
8005-01-1	South Crane (109 bhp, DD 3-71)
8005-02-1	North Crane (238 bhp, DD 6-71)

(a) Emission Limits: Mass emissions from the North and South Crane IC engines listed above shall not exceed the limits listed in Tables 5.1-3 and 5.1-4. In addition, the following specific emission limits apply:

- (i) *North Crane Engine* - Controlled emissions of NOx from the North Crane engine shall not exceed either 8.4 g/bhp-hr or 797 ppmv at 15 percent oxygen or 2,400 ppmv at 3 percent oxygen. Compliance shall be based on quarterly inspections and biennial source testing according to Table 4.1 and Section (c) below (or more frequent testing, as determined by the APCO, if quarterly portable NOx analyzer results show potential exceedances of the standard).

(b) Operational Limits: The following operational limits apply to all the IC engines:

- (i) *Liquid Fuel Sulfur Limit* - Diesel fuel used by all IC engines shall have a sulfur content no greater than 0.20 weight percent as determined by APCD-approved ASTM methods.

- (ii) *Operating Limits* - Torch shall comply with the following operating limits:

- The North crane engine shall not use more than: 319 gallons per day; 6,638 gallons per quarter; 13,275 gallons per year of diesel fuel.
- The South crane engine shall not use more than: 156 gallons per day; 646 gallons per quarter; 1,293 gallons per year of diesel fuel.
- The South crane engine shall operate no more than 200 hours per year.

- (iii) *Emergency Diesel IC Engine Use* - The diesel-fired IC engines driving the standby emergency (a) power generator and (b) fire pump shall only be operated for testing or emergency purposes no more than 200 hours per calendar year each. Torch shall install, operate and properly maintain a dedicated non-resettable elapsed-time meter on each engine. None of these engines may be used to advance drilling operations.

- (iv) *Engine Identification and Maintenance* - Each IC engine shall be identified with a permanently-affixed plate, tag or marking, referencing either: (i) the IC engine's make, model, serial number, rated BHP and corresponding RPM; or (ii) the operator's unique tag number. The tag shall be made accessible and legible to facilitate APCD inspection of the IC engine.

(c) Monitoring: The following source testing and periodic monitoring conditions apply to the North and South Crane IC engines:

- (i) *Fuel/Hourly Use Meters* - Torch shall report individual IC engine hours of operation utilizing a District-approved elapsed time meter <sup>6</sup>. A monthly log shall be maintained that records the hours of operation of each engine.
  - (ii) *Inspection and Maintenance Plan (I&M Plan)* - Torch shall implement quarterly inspections on the North Crane engine according to the APCD-approved Engine Inspection and Maintenance Plan consistent with the requirements of Rule 333, Section E. This Plan, and any subsequent APCD-approved revisions, is incorporated by reference as an enforceable part of this permit.
  - (iii) *Source Testing* - For the North Crane engine Torch shall perform source testing of air emissions and process parameters listed in Table 4.1 (Source Test Requirements) in accordance with the requirements of Rule 333, Section G. The Source Testing permit condition below shall be adhered to.
  - (iv) *Fuel Data* - Torch shall maintain documentation of the sulfur content (as determined by District-approved ASTM methods) of each fuel shipment as certified in the fuel suppliers billing vouchers. (*semi-annual statement(s) from all fuel suppliers certifying the fuel supplied as meeting the CARB's low-sulfur diesel limit are also acceptable*).
- (d) Recordkeeping: Torch shall keep the required logs, as applicable to this permit, which demonstrate compliance with emission limits, operation limits and monitoring requirements above. All logs shall be available to the District upon request. Written information (logs) shall include:
- (i) The hours of operation for the South crane engine (by ID number). The log shall detail the number of operating hours on each day the engine is operated and the cumulative total quarterly and annual hours.
  - (ii) The sulfur content (as determined by District-approved ASTM methods) of each fuel shipment as certified in the fuel suppliers billing vouchers (*semi-annual statements from all fuel suppliers certifying the fuel supplied as meeting the CARB's low-sulfur diesel limit are also acceptable*). On an annual basis, the heating value of the diesel fuel (Btu/gal) shall be recorded. (*annual statements from all fuel suppliers, certifying the HHV of the fuel supplied, are also acceptable*). The billing vouchers, if any, shall be attached to the log.
  - (iii) IC engine operations logs, including quarterly inspection results, consistent with the requirements of Rule 333.H.
  - (iv) If an operator's tag number is used in lieu of an IC engine identification plate, documentation which references the operator's unique IC engine ID number to a list containing the make, model, serial number, rated maximum BHP and the corresponding RPM.
- (e) Reporting: On a semi-annual basis, a report detailing the previous six month's activities shall be provided to the APCD. The report must list all data required by the *Semi-Annual Compliance Verification Reports* condition of this permit.  
(*Re: APCD Rules 202, 333 and 1303, PTO 9114, 40 CFR 70.6*)

---

<sup>6</sup> The hours of operation, along with the engine horsepower rating and BSFC data as listed in Table 5.1-1 of this permit, a fuel correction factor of 1.06, and a high heating value of 138,200 Btu/gal will be used to determine the number of gallons of fuel consumed per time period.

C.2 **Combustion Equipment - Flare.** The following equipment are included in this emissions unit category:

ID No.	Name
8005-15-1/4	Flare Relief System; 2,500 MMBtu/hr

(a) Emission Limits: Mass emissions from the flare relief system listed above shall not exceed the limits listed in Tables 5.1-3 and 5.1-4.

(b) Operational Limits:

- (i) *Flaring Volumes* - Flaring volumes from the purge and pilot, planned continuous, planned intermittent (other) and unplanned events shall not exceed the volumes in Table 5.1-1.
- (ii) *Flare Fuel Gas Sulfur Limit* - The sulfur content of produced gas combusted during planned flaring events shall not exceed 15 gr/100 scf (239 ppmv) total sulfur calculated as hydrogen sulfide at standard conditions. Planned flaring is defined in District Rule 359. Compliance shall be based on annual lab analyses. Torch shall perform additional testing of the sulfur content, using approved test methods, as requested by the APCD. Torch shall submit the lab analyses reports to the APCD.
- (iii) *Use of Propane as Flare Fuel Gas* - Propane may be used as an auxiliary fuel to the flare purge and pilot fuel gas on a temporary basis only during times when the supply of produced gas becomes disabled. The propane shall meet Gas Processors Association specifications for propane or HD-5 and shall have a total sulfur content no greater than 15 gr/100 scf (239 ppmv). Torch shall record in a log each usage of propane in a APCD-approved format and shall maintain documentation of the sulfur content of each fuel shipment as certified in the fuel suppliers billing vouchers.

(c) Monitoring: The following monitoring conditions apply to the flare relief system:

- (i) *Flare Volumes* - The volumes of gas flared shall be monitored by use of the APCD-approved flare header flow meter. The meter shall be operated consistent with Torch's *Process Monitor Calibration and Maintenance Plan*.
- (ii) *Sulfur Content* - The total sulfur content of produced gas combusted during flaring events shall be measured on an annual basis using APCD-approved ASTM methods. Torch shall perform additional testing of the sulfur content, using approved test methods, as requested by the APCD. Torch shall submit the lab analyses reports to the District.

(d) Recordkeeping: The following recordkeeping conditions apply to the flare relief system:

- (i) *Flare Volumes* - All flaring events shall be recorded in a log. The log shall include: date; duration of flaring events (start and stop times); quantity of gas flared; reason for flaring events; and the type of event (e.g., planned or unplanned).
- (ii) *Sulfur Content* - A log of the total sulfur content of produced gas combusted during flaring events shall be maintained.

(iii) *Propane as Flare Fuel Gas* - Torch shall record in a log each usage of propane in a APCD-approved format and shall maintain documentation of the sulfur content of each fuel shipment as certified in the fuel suppliers billing vouchers.

(e) **Reporting:** On a semi-annual basis, a report detailing the previous six month's activities shall be provided to the APCD. The report must list all data required by the *Semi-Annual Compliance Verification Reports* condition of this permit.

(Re: APCD Rules 359 and 1303, PTO 9114, 40 CFR 70.6)

C.3 **Fugitive Hydrocarbon Emissions Components.** The following equipment are included in this emissions unit category:

ID No.	Name
	<i>Gas/Light Liquid Service Components</i>
8005-08-01	Valves/Connections/Other – Controlled (10057 component leak paths)
8005-08-02	Valves/Connections/Other – Uncontrolled (220 component leak paths)
	<i>Oil Service Components</i>
8005-07-01	Valves/Connections/Other – Controlled (8,258 component leak paths)
8005-07-02	Valves/Connections/Other – Uncontrolled (20 component leak paths)

(a) **Emission Limits:** Mass emissions from the gas/light liquid service and oil service components listed above shall not exceed the limits listed in Tables 5.1-3 and 5.1-4.

(b) **Operational Limits:** Operation of the equipment listed in this section shall conform to the requirements listed in APCD Rule 331.D and E. Compliance with these limits shall be assessed through compliance with the monitoring, recordkeeping and reporting conditions in this permit. In addition Torch shall meet the following requirement:

(i) *VRS Use* - The vapor recovery/gas collection (VRGC) system shall be in operation when the equipment connected to the VRGC system at the facility is in use. The VRGC system includes piping, valves, and flanges associated with the VRGC system. The VRGC system shall be maintained and operated to minimize the release of emissions from all systems, including pressure relief valves and gauge hatches.

(ii) *I&M Program* - The APCD-approved I&M Plan for Platform Hillhouse shall be implemented for the life of the project. The Plan, and any subsequent District approved revisions, is incorporated by reference as an enforceable part of this permit.

(iii) *Leak-Path Count* - The total leak-path component count listed in Torch's most recent I&M component leak-path inventory shall not exceed the total leak-path component count listed in Table 5.1-1 by more than five percent. This five percent range is to allow for minor differences due to component counting methods and does not constitute allowable emissions growth due to the addition of new equipment.

(iv) *Venting* - All routine venting of hydrocarbons shall be routed to either the sales compressor, flare header, injection well or other District-approved control device.



- (v) **BACT** - Component (valve) ID No. 96667 on make up gas line to the shipping tank is subject to BACT requirements. BACT, as defined in Table 4.2, shall be implemented for the life of the project.
- (c) **Monitoring:** The equipment listed in this section are subject to all the monitoring requirements listed in APCD Rule 331.F. The test methods in Rule 331.H shall be used, when applicable.
- (d) **Recordkeeping:** All inspection and repair records shall be retained at the source for a minimum of five years. The equipment listed in this section are subject to all the recordkeeping requirements listed in APCD Rule 331.G. In addition, Torch shall:
  - (i) **I&M Log** - Torch shall record in a log the following: a record of leaking components found (including name, location, type of component, date of leak detection, the ppmv reading, date of repair attempt, method of detection, date of re-inspection and ppmv reading after leak is repaired); a record of the total components inspected and the total number and percentage found leaking by component type; a record of leaks from critical components; a record of leaks from components that incur five repair actions within a continuous 12-month period; and, a record of component repair actions including dates of component re-inspections.
- (e) **Reporting:** The equipment listed in this section are subject to all the reporting requirements listed in APCD Rule 331.G. On a semi-annual basis, a report detailing the previous six month's activities shall be provided to the APCD. The report must list all data required by the *Semi-Annual Compliance Verification Reports* condition of this permit.  
[Re: APCD Rules 331 and 1303, PTO 9114, 40 CFR 70.6]

**C.4 Crew and Supply Boats.** The following equipment are included in this emissions category:

ID No.	Name
8005-20-1	Crew Boat Main Engines – Controlled
8005-20-2	Crew Boat Main Engines – Uncontrolled
8005-21-1	Crew Boat Auxiliary Engines
8005-16-1	Supply Boat Main Engines – Controlled
8005-16-2	Supply Boat Main Engines – Uncontrolled
8005-17-1	Supply Boat Auxiliary Engines
8005-18-1	Supply Boat Bow Thrusters
8005-19-1	Emergency Response Boat

- (a) **Emission Limits:** Mass emissions from the crew, supply and emergency boats listed above shall not exceed the limits listed in Tables 5.1-3 and 5.1-4. In addition:
  - (i) **NO<sub>x</sub> Emissions** - Controlled emissions of NO<sub>x</sub> from each diesel fired main engine in the supply boat shall not exceed 247 lb./1000 gallons (5.48 g/bhp-hr). Emissions of NO<sub>x</sub> from each diesel fired main engine in each controlled crew boat shall not exceed 337 lb./1000 gallons (8.4 g/bhp-hr). Compliance shall be based on annual source testing consistent with the requirements listed in Table 4.1 and permit Condition 25 of PTO 9114 (issued September 4, 1994). Spot charter crew boats, spot charter supply boats and emergency response (e.g., *Clean Seas*) boats are not required to comply with this controlled NO<sub>x</sub> emission rate.

- (ii) *Crew, Supply and Emergency Response Boat Stationary Source Maximum Permitted Emissions* - To more accurately define the Nuevo South County Offshore Stationary Source's annual potential-to-emit (which is used to determine fees for Air Quality Plans (Rule 210.F)), crew boat, supply boat (including spot charters) and emergency response boat usage, in aggregate, associated with OCS Platforms A, B, C, Henry and Hillhouse shall not exceed five (5) times the annual emission limits shown in Table 5.2. These limits apply to the crew boats, supply boats and emergency response boats separately.
- (b) Operational Limits: Operation of the equipment listed in this section shall not exceed the limits listed below. Compliance with these limits shall be assessed through compliance with the monitoring, recordkeeping and reporting conditions in this permit.
  - (i) The supply boat main engines shall not use more than: 1,400 gallons per day; 7,278 gallons per quarter; 14,556 gallons per year of diesel fuel.
  - (ii) The supply boat auxiliary engines (generator and bow thruster engines) shall not use more than: 205 gallons per day; 1,066 gallons per quarter; 2,131 gallons per year of diesel fuel.
  - (iii) The emergency response boat engines shall not use more than: 12,500 gallons per quarter; 50,000 gallons per year of diesel fuel. Torch's pro-rated allocation of allowable emergency response boat fuel usage shall not exceed: 1,137 gallons per quarter; 4,546 gallons per year of diesel fuel.
  - (iv) The crew boat main engines shall not use more than: 1,252 gallons per day; 18,776 gallons per quarter; 75,104 gallons per year of diesel fuel.
  - (v) The crew boat auxiliary engines shall not use more than: 105 gallons per day; 1,574 gallons per quarter; 6,295 gallons per year of diesel fuel.
  - (vi) *Crew, Supply and Emergency Response Boat Stationary Source Operational Limits* - To more accurately define the Nuevo South County Offshore Stationary Source's annual potential-to-emit (which is used to determine fees for Air Quality Plans (Rule 210.F)), crew boat, supply boat (including spot charters) and emergency response boat usage, in aggregate, associated with OCS Platforms A, B, C, Henry and Hillhouse shall not exceed five times the annual fuel use limits shown in items (i), (ii), (iii) and (iv) above. These limits apply to the crew boat main engines, crew boat auxiliary engines, supply boat main engines, supply boat auxiliary engines and emergency response boat engines separately.
  - (vii) *Spot Charter Boats* - The number of allowable annual spot charter crew boat trips shall not exceed ten percent of the actual annual number of trips made by the controlled (i.e., primary) crew boat. The number of allowable annual spot charter supply boat trips shall not exceed ten percent of the actual annual number of trips made by the controlled (i.e., primary) supply boats. A trip is defined as any time the boat makes a trip from the port to the platform and back (i.e., a round trip).
  - (viii) New/Replacement Boats – Torch may utilize any new/replacement project boat without the need for a permit revision if that boat meets the following conditions:

- (a) The main engines are of the same or less bhp rating; and
- (b) The combined pounds per day potential to emit (PTE) of all auxiliary and bow thruster engines is the same or less than the sum of the pounds per day PTE for these engines as determined from the corresponding Table 5.1-3 emission line items of this permit.
- (c) The NO<sub>x</sub>, ROC, CO, PM and PM<sub>10</sub> emission factors are the same or less for the main and auxiliary engines. For the main engines, NO<sub>x</sub> emissions must meet the 337 lb/1000 gallons emission standard.

The above criteria also apply to spot charter boats, except for the NO<sub>x</sub> emission standard noted in (c) above. Any proposed new/replacement crew, supply or spot charter boat that does not meet the above requirements (a) - (c) shall first obtain a permit revision prior to operating the boat. The APCD may require manufacturer guarantees and emission source tests to verify this NO<sub>x</sub> emission standard.

Torch shall revise the Boat Monitoring and Reporting Plan, obtain APCD approval of such revisions and implement the revised Plan prior to bringing any new/replacement boat into service, except for the use of spot charters. If a new spot charter is brought into service then Torch shall revise and resubmit the boat plan within thirty (30) calendar days after it is first brought into service. If the fuel metering and emissions computation procedures for a new spot charter are identical to a boat that is already addressed in the approved boat plan, a letter addendum stating this will suffice for the revision/re-submittal of the boat plan.

Prior to bringing the boat into service for the first time, Torch shall submit the information listed below to the APCD for any new/replacement crew and supply boat that meets the requirements set forth in (a) - (c) above, and for new spot charters that have been not been previously used on the Torch OCS Platforms project. For spot charters, this information shall be submitted within thirty (30) calendar days after the boat is first brought into service. Torch shall notify the APCD (via fax or E-mail) within three (3) calendar days after a new spot charter is first brought into operation. Any boat put into service that does not meet the requirements above, as determined by the APCD at any time, shall immediately cease operations and all prior use of that boat shall be considered a violation of this permit.

- Boat description, including the type, size, name, engine descriptions and emission control equipment.
- Engine manufacturers' data on the emission levels for the various engines and applicable engine specification curves.
- A quantitative analysis using the operating and emission factor assumptions given in tables 5.1-1 and 5.1-2 of this permit that demonstrates criteria (b) above is met
- Estimated fuel usage within 25-miles of Platform Hillhouse

- Any other information the APCD deems necessary to ensure the new boat will operate consistent with the analyses that form the basis for this permit.
- (ix) *Liquid Fuel Sulfur Limit* - Diesel fuel used by all IC engines shall have a sulfur content no greater than 0.20 weight percent as determined by APCD-approved ASTM methods.
- (c) Monitoring: Torch shall comply with the latest *Boat Monitoring and Reporting Plan* (as submitted on February 4, 2000 and subsequent APCD-approved updates). This revised Plan reflects the engines associated with the *M/V Santa Cruz*. Torch shall fully implement this Plan or its APCD-approved updates, for the life of the project. The Plan requires non-resettable totalizing fuel meters and boat logs to verify points of departure and fuel use for each trip segment. Torch may propose alternative data collection methods that are equivalent in accuracy and reliability as part of the *Boat Monitoring and Reporting Plan*. The GPS (or equivalent) location equipment may be omitted since all the boat trips occur within 25-miles of the platform..
- The data collected shall demonstrate that the boats are being operated consistent with the emission assumptions used in the issuance of this operating permit. Fuel use for all the main engines must be collected while the boats are in transit from port to the platform. Spot charter boats shall, at a minimum, track total fuel usage on a per trip basis using APCD-approved procedures. Emergency response boats shall, at a minimum, track fuel usage on a quarterly basis using APCD-approved procedures. These data shall be submitted in an APCD-approved format to the APCD.
- (d) Recordkeeping: The following records shall be maintained in legible logs and shall be made available to the APCD upon request:
- (i) *Maintenance Logs* - Maintenance log summaries that include details on injector timing, setting adjustments, major engine overhauls, and routine engine maintenance. These logs and summaries shall be made available to the APCD upon request.
  - (ii) *Crew Boat Fuel Usage* - Daily, quarterly and annual fuel use for the crew boat main engines and auxiliary engines.
  - (iii) *Supply Boat Fuel Usage* - Daily, quarterly and annual fuel use for the supply boat main engines, generator engine and bow thruster engine.
  - (iv) *Emergency Response Boat Fuel Usage* - Total quarterly and annual fuel use for the emergency response boat and Platform Hillhouse's allocation of that total.
  - (v) In addition to the recordkeeping requirements of Torch's approved *Boat Monitoring and Reporting Plan*, the following log shall be maintained and shall be provided to the APCD in the semi-annual *Compliance Verification Reports*:
    - The number of boat trips made by the primary crew and supply boats, itemized by the date of the trip and the boat name.

- The number of boat trips made by the spot-charter crew and supply boats, itemized by the date of the trip and the boat name.

- (e) **Reporting:** On a semi-annual basis, a report detailing the previous six month's activities shall be provided to the APCD. The report must list all data required by the *Semi-Annual Compliance Verification Reports* condition of this permit.

[Re: APCD Rule 1303, PTO 9114, 40 CFR 70.6]

- C.5 **Pigging Equipment.** The following equipment are included in this emissions category:

ID No.	Name
8005-28-1	Gas Pig Launcher
8005-29-1	Gas Pig Receiver
8005-30-1	Oil Pig Launcher
8005-31-1	Oil Pig Receiver

- (a) **Emission Limits:** Mass emissions from the gas and oil pig launchers and receivers listed above shall not exceed the limits listed in Tables 5.1-3 and 5.1-4.
- (b) **Operational Limits:** Operation of the equipment listed in this section shall conform to the requirements listed in APCD Rule 325.E. Compliance with these limits shall be assessed through compliance with the monitoring, recordkeeping and reporting conditions in this permit. In addition Torch shall meet the following requirement:
- (i) *Events* - The number of oil and gas pig operations (events) shall not exceed the maximum operating schedule listed in Table 5.1-1. This will be verified by data from the pigging operations log kept by Torch.
  - (ii) *Pressure* - Prior to opening each gas or oil pig, the pressure in the pig shall not exceed 1 psig. For all pigging, this limit will be verified by a pressure gauge recorder at the VRU compressor inlet or by any other contrivance that provides the same accuracy and has been approved by the APCD prior to its installation.
  - (iii) *ROC/TOC Ratio* - Torch shall first purge and blanket the pig receivers/launchers with 'sales gas' used by Torch before opening the hatches. The ROC/TOC ratio of this gas, by weight, shall not exceed 0.13, as measured quarterly by Torch.
  - (iv) *Openings* - Access openings to the pig launchers/receivers shall be kept closed at all times, except when a pipeline pig is being placed into or removed from the launcher/receiver.
- (c) **Monitoring:** see conditions (b)(I) through (b)(iii) above, particularly the *quarterly* ROC/TOC ratio determination required under (b) (iii).
- (d) **Recordkeeping:** Torch shall record in a log each pigging operation. The log shall include the date pigging unit used (e.g., oil or gas launcher or receiver) and the pressure data at the VRU compressor inlet pressure recorder, immediately prior to the pigging chamber opening..

- (e) **Reporting:** On a semi-annual basis, a report detailing the previous six month's activities shall be provided to the APCD. The report must list all data required by the *Semi-Annual Compliance Verification Reports* condition of this permit.  
[Re: APCD Rules 325 and 1303, PTO 9114, 40 CFR 70.6]

C.6 **Sumps/Tanks/Separators.** The following equipment are included in this emissions category:

ID No.	Name
8005-22-1	Flotation Cell Unit
8005-23-1	Flotation Cell Unit
8005-24-1	Wemco Surge Tank
8005-25-1	Settling Tank
8005-26-1	Sm. Drill water Tank
8005-27-1	Mud Tank
8005-28-1	Horizontal Surge Tank
8005-29-1	Horizontal Surge Tank
8005-30-1	Portable Tank B
8005-31-1	Portable Tank B

- (a) **Emission Limits:** Mass emissions from the equipment listed above shall not exceed the limits listed in Tables 5.1-3 and 5.1-4.
- (b) **Operational Limits:** All process operations from the equipment listed in this section shall meet the requirements of APCD Rule 325, Sections D, E, F and G. Compliance with these limits shall be assessed through compliance with the monitoring, recordkeeping and reporting conditions in this permit.
- (i) **VRS Use** - The vapor recovery system shall be in operation when the equipment connected to the VRS system at the facility is in use. The VRS system includes piping, valves, and flanges associated with the VRS system. The VRS system shall be maintained and operated to minimize the release of emissions from all systems, including pressure relief valves and gauge hatches.
- (ii) **Vapor Recovery System Efficiency** - The VRS shall maintain a minimum efficiency of ~~95~~ 90 percent (mass basis).
- (iii) **Portable Tanks A/B** - Portable Tanks A/B may be operated without the use of vapor recovery (as required by Sections D.1 and E of Rule) only if their use is exempt per the provisions of Rule 325 (Section B - Exemptions).
- (c) **Monitoring:** The equipment listed in this section shall be subject to all the monitoring requirements of APCD Rule 325.H. The test methods outlined in APCD Rule 325.G shall be used, when applicable. In addition, Torch shall:
- (i) Analyze the process streams listed the *Process Stream Sampling and Analysis* permit condition below.
- (d) **Recordkeeping:** The equipment listed in this section is subject to all the recordkeeping requirements listed in APCD Rule 325.F. In addition, Torch shall maintain logs for the information listed below. These logs shall be made available to the APCD upon request:

- (i) On a monthly basis, the total oil emulsion and produced gas production along with the number of days per month of production
  - (ii) Process stream analyses data as required from the Process Stream Sampling and Analysis permit condition.
  - (iii) On a daily basis, the amount of oily water processed in each oil/water separator floatation cell unit in units of gallons.
  - (iv) On an as-used basis, the usage of the two portable tanks on the platform. The log shall include the throughput and total volume of material stored in the tanks, the type of material stored in the tanks, dates that the tanks were in use, and any other reasonable data required by the District to determine emissions from the portable tanks. In addition, Torch shall maintain documentation that demonstrates that each use of the tank(s) is exempt from the use of vapor recovery per Rule 325.B. The portable tanks shall not be used for primary separation or storage of crude oil.
- (e) **Reporting:** On a semi-annual basis, a report detailing the previous six month's activities shall be provided to the APCD. The report must list all data required by the *Semi-Annual Compliance Verification Reports* condition of this permit.  
*[Re: APCD Rules 325 and 1303, PTO 9114, 40 CFR 70.6]*

C.7 **Solvent Usage.** The following equipment are included in this emissions unit category:

ID No.	Name
8003-12-1	Cleaning/Degreasing

- (a) **Emission Limits:** Mass emissions from the solvent usage shall not exceed the limits listed in Tables 5.1-3 and 5.1-4.
- (b) **Operational Limits:** Use of solvents for cleaning/degreasing shall conform to the requirements of APCD Rules 317, 322, 323 and 324. Compliance with these rules shall be assessed through compliance with the monitoring, recordkeeping and reporting conditions in this permit and facility inspections.
  - (i) *Containers* - Vessels or containers used for storing materials containing organic solvents shall be kept closed unless adding to or removing material from the vessel or container.
  - (ii) *Materials* - All materials that have been soaked with cleanup solvents shall be stored, when not in use, in closed containers that are equipped with tight seals.
  - (iii) *Solvent Leaks* - Solvent leaks shall be minimized to the maximum extent feasible or the solvent shall be removed to a sealed container and the equipment taken out of service until repaired. A solvent leak is defined as either the flow of three liquid drops per minute or a discernable continuous flow of solvent.
  - (iv) *Reclamation Plan* - Torch may submit a Plan to the District for the disposal of any reclaimed solvent. If the Plan is approved by the District, all solvent disposed of pursuant to the Plan will not be assumed to have evaporated as emissions into the air and, therefore, will not be counted as emissions from the source. Torch shall obtain District approval of the procedures used for such a disposal Plan. The Plan shall detail all procedures used for collecting, storing and transporting the reclaimed solvent. Further, the ultimate fate of these reclaimed solvents must be stated in the Plan.

- (c) **Monitoring:** none

- (d) **Recordkeeping:** Torch shall record in a log the following on a monthly basis for each solvent used: amount used; the percentage of ROC by weight (as applied); the solvent density; the amount of solvent reclaimed for District-approved disposal; whether the solvent is photochemically reactive; and, the resulting emissions to the atmosphere in units of pounds per month and pounds per day. Product sheets (MSDS or equivalent) detailing the constituents of all solvents shall be maintained in a readily accessible location on the platform.
- (e) **Reporting:** On a semi-annual basis, a report detailing the previous six month's activities shall be provided to the APCD. The report must list all data required by the *Semi-Annual Compliance Verification Reports* condition of this permit.  
[Re: APCD Rules 317, 322, 323, 324 and 1303, PTO 9114, 40 CFR 70.6]
- C.8 **Facility Throughput Limitations.** Platform Hillhouse production shall be limited to a monthly average of 30,000 barrels of oil emulsion<sup>7</sup> per day and 15 million standard cubic feet of produced gas per day. Torch shall record in a log the volumes of oil emulsion and gas produced and the actual number of days in production per month. The above limits are based on actual days of operation during the month. [Re: PTO 9114]
- C.9 **Produced Gas.** Torch shall direct all produced gases to the sales compressors, the flare header or other permitted control device when de-gassing, purging or blowing down any oil and gas well or tank, vessel or container that contains reactive organic compounds or reduced sulfur compounds due to activities that include, but are not limited to, process or equipment turnarounds, process upsets (e.g., well spikes), well blow down and MMS ordered safety tests. [Re: APCD Rules 325, 331, PTO 9114]
- C.10 **Diesel IC Engines - Particulate Matter Emissions.** To ensure compliance with District Rules 205.A, 302, 304, 309 and the California Health and Safety Code Section 41701, Torch shall implement manufacturer recommended operational and maintenance procedures to ensure that all project diesel-fired engines minimize particulate emissions. Torch shall implement their *IC Engine Particulate Matter Operation and Maintenance Plan* (12/20/94 and all APCD-approved updates thereof) for the life of the project. This Plan details the manufacturer recommended maintenance and calibration schedules that Torch will implement. Where manufacturer guidance is not available, the recommendations of comparable equipment manufacturers and good engineering judgement shall be utilized. All project diesel-fired engines, regardless of exemption status, shall be included in this Plan. [Re: APCD Rules 205.A, 302, 304, 309, PTO 9114]
- C.11 **Abrasive Blasting Equipment.** All abrasive blasting activities performed on Platform Hillhouse shall comply with the requirements of the California Administrative Code Title 17, Sub-Chapter 6, Sections 92000 through 92530. [Re: APCD Rules 303, PTO 9114]
- C.12 **Process Monitoring Systems - Operation and Maintenance.** All platform process monitoring devices listed in Section 4.10 of this permit shall be properly operated and maintained according to manufacturer recommended specifications. Torch shall implement their *Process Monitor Calibration and Maintenance Plan* (12/20/94 and all APCD-approved updates thereof) for the life

---

<sup>7</sup> Oil emulsion is defined as the total amount of crude oil and water produced from the wells.



of the project. This Plan details the manufacturer recommended maintenance and calibration schedules. Where manufacturer guidance is not available, the recommendations of comparable equipment manufacturers and good engineering judgement is utilized. Within 45 days of the issuance of this permit, Torch shall submit and obtain APCD approval of a revised *Process Monitor Calibration and Maintenance Plan*. This revised Plan shall be updated to reflect the engines associated with the *M/V Santa Cruz*. [Re: PTO 9114]

**C.13 Source Testing.** The following source testing provisions shall apply:

- (i) Torch shall conduct source testing of air emissions and process parameters listed in Section 4.11 and Table 4.1 of this Permit to Operate. More frequent source testing may be required if the equipment does not comply with permitted limitations or if other compliance problems, as determined by the APCO, occur. Source testing of the North Crane engine shall be performed on a biennial schedule using June 1994 as the initial test date. The crane engine shall be loaded to the maximum safe load obtainable. Source testing of one crew boat and one supply boat shall occur on an annual basis beginning no later than September of 1995. The crew and supply boat main engines shall be tested at normal cruise speeds (~~minimum of~~ approximately 70 percent of maximum engine load).
- (ii) Torch shall submit a written source test plan to the District for approval at least thirty (30) calendar days prior to initiation of each source test. The source test plan shall be prepared consistent with the District's *Source Test Procedures Manual* (revised May 1990 and any subsequent revisions). Torch shall obtain written District approval of the source test plan prior to commencement of source testing. The District shall be notified at least ten (10) calendar days prior to the start of source testing activity to arrange for a mutually agreeable source test date when District personnel may observe the test.
- (iii) Source test results shall be submitted to the District within forty-five (45) calendar days following the date of source test completion and shall be consistent with the requirements approved within the source test plan. Source test results shall demonstrate compliance with emission rates in Section 5 and applicable permit conditions. All District costs associated with the review and approval of all plans and reports and the witnessing of tests shall be paid by Torch as provided for by District Rule 210.
- (iv) Source test for an item of equipment shall be performed on the scheduled day of testing (the test day mutually agreed to) unless circumstances beyond the control of the operator prevent completion of the test on the scheduled day. Such circumstances include mechanical malfunction of the equipment to be tested, malfunction of the source test equipment, delays in source test contractor arrival and/or set-up, or unsafe conditions on site. Except in cases of an emergency, the operator shall seek and obtain APCD approval before deferring or discontinuing a scheduled test, or performing maintenance on the equipment item on the scheduled test day. If the test can not be completed on the scheduled day, then the test shall be rescheduled for another time with prior authorization by the APCD. Failing to perform the source test of an equipment item on the scheduled test day without a valid reason and without APCD's prior authorization, except in the case of an emergency, shall constitute a violation of this permit. If a test is postponed due to an

emergency, written documentation of the emergency event shall be submitted to the APCD by the close of the business day following the scheduled test day.  
[Re: PTO 9114]

- C.14 **Process Stream Sampling and Analysis.** Torch shall sample analyze the process streams listed in Section 4.11 of this permit according to the methods and frequency detailed in that Section. All process stream samples shall be taken according to District approved ASTM methods and must follow traceable chain of custody procedures. [Re: APCD Rules 325, 331, 333, PTO 9114]
- C.15 **Recordkeeping.** All records and logs required by this permit and any applicable District, state or federal rule or regulation shall be maintained for a minimum of five calendar years from the date of information collection and log entry at the platform. These records or logs shall be readily accessible and be made available to the District upon request. [Re: APCD Rule 1303, PTO 9114, 40 CFR 70.6]
- C.16 **Semi-Annual Monitoring/Compliance Verification Reports.** Twice a year, Torch shall submit a monitoring and compliance verification report to the APCD. Each report shall be used to verify compliance with the prior two calendar quarters. The first report shall cover calendar quarters 1 and 2 (January through June) and shall be submitted no later than September 1. The second report shall cover calendar quarters 3 and 4 (July through December) and shall be submitted no later than March 1. Each report shall contain information necessary to verify compliance with the emission limits and other requirements of this permit. These reports shall be in a format approved by the APCD. All logs and other basic source data not included in the report shall be available to the APCD upon request. The second report shall also include an annual report for the prior four quarters. Pursuant to Rule 212, the annual report shall include a completed *APCD Annual Emissions Inventory* questionnaire. The report shall include the following information:

(a) Internal Combustion Engines.

- (1) The daily, quarterly and annual operating hours data for each pedestal crane engine in units of hours.
- (2) The monthly and cumulative annual hours of operation for the emergency electrical generator (by ID number).
- (3) Results of the quarterly readings of the portable NO<sub>x</sub> analyzer for the North Crane IC engine.
- (4) Total sulfur content of each diesel fuel shipment. *(semi-annual statements from all fuel suppliers certifying the fuel supplied as meeting the CARB's low sulfur diesel limit are also acceptable).*
- (5) Documentation of any equivalent routine IC engine replacement.
- (6) Summary results of all compliance emission source testing performed.

(b) Flare.

- (1) The highest total sulfur content and hydrogen sulfide content observed annually in the flare header.
- (2) The total sulfur content of flare purge and pilot fuel gas as measured annually.
- (3) The volumes of gas (including natural gas and propane, if any) combusted and resultant mass emissions for each flare category (i.e., Purge/Pilot; Planned Continuous; Planned Other; Unplanned Other), shall be presented as a cumulative summary for each day, quarter and year.

(c) Fugitive Hydrocarbons. Rule 331/Enhanced Monitoring fugitive hydrocarbon I&M program data (on a quarterly basis):

- (1) Inspection summary.
- (2) Record of leaking components.
- (3) Record of leaks from critical components.
- (4) Record of leaks from components that incur five repair actions within a continuous 12-month period.
- (5) Record of component repair actions including dates of component re-inspections.
- (6) An updated FHC I&M inventory due to change in component list or diagrams.
- (7) Listing of components installed as BACT under APCD Rule 331 as approved by the APCD.

(d) Crew and Supply Boats.

- (1) Daily, quarterly and annual fuel use for the crew boat main engines and auxiliary engines while operating within 25 miles of Platform A, itemized by regular crew boat (controlled ICE) usage and spot charter/emergency response boat (uncontrolled ICE) usage.
- (2) Daily, quarterly and annual fuel use for the supply boat main engines and auxiliary engines (including the bow thruster engine) while operating within 25 miles of Platform Hillhouse, itemized by regular crew boat (controlled ICE) usage and spot charter and/or emergency response boat (uncontrolled ICE) usage.
- (3) The sulfur content of each delivery of diesel fuel used by the crew and supplyboats (*semi-annual statements from all fuel suppliers certifying the fuel supplied as meeting the CARB's low sulfur diesel limit are also acceptable*).
- (4) Information regarding any new project boats servicing Nuevo's Platform Hillhouse, as detailed in Permit Condition 9.C.4.(b) above.
- (5) If requested by the APCD staff, maintenance log summaries including details on injector timing, setting adjustments, major engine overhauls, and routine engine tune-ups. For spot charters this shall be provided as available.
- (6) The number of boat trips made (a) by the crew and supply boats and (b) by the spot charter (crew and supply) boats, both itemized by the trip dates and the boat names.
- (7) Summary results of all compliance emission source testing performed.

(e) Pigging.

- (1) For each pig receiver and launcher, the number of pigging events per day, quarter and year.
- (2) The ROC/TOC ratio of the 'sales gas' used to purge and blanket each receiver and launcher prior to hatch opening, as measured quarterly.

(f) Tanks/Sumps/Separators.

- (1) The usage of the two portable tanks including the throughput and total volume of material stored in the tanks, the type of material stored in the tanks and the dates the tanks were in use.

(g) Solvent Usage. On a monthly basis: the amount of solvent used; the percentage of ROC by weight (as applied); the solvent density; the amount of solvent reclaimed; whether the solvent is photochemically reactive; and, the resulting emissions of ROC and photochemically reactive solvents to the atmosphere in units of pounds per month.

(h) General Reporting Requirements.

- (1) On a monthly basis, the total oil emulsion and produced gas production along with the number of days of production;
- (2) On quarterly basis, the emissions from each permitted emission unit for each criteria pollutant (shall include tons per quarter **totals of all pollutants** by each emission unit). The third/fourth quarter report shall include tons per year totals for all pollutants (by each emission unit).
- (3) On quarterly basis, the emissions from each exempt emission unit for each criteria pollutant (the annual report shall include the annual ROC and NO<sub>x</sub> emissions from all permit exempt activities).
- (4) Breakdowns and variances reported/obtained per Regulation V along with the excess emissions that accompanied each occurrence
- (5) A summary of each and every occurrence of non-compliance with the provisions of this permit, applicable APCD rules, and any other applicable air quality requirement.
- (6) The produced gas and produced oil process stream analyses as required by condition 9.C.14 of this permit (process stream analyses to be performed per Section 4.11)

[Re: PTO 9114, ATC/PTO 9790, ATC/PTO 10092, 40 CFR 70.6]

C.17 **Permitted Equipment.** Only those equipment items listed in Attachment 10.6 are covered by the requirements of this permit and District Rule 201.B. [Re: APCD Rule 1303, PTO 9114]

- C.18 **Mass Emission Limitations.** Emissions for the entire facility shall not exceed the total limits listed in Table 5.2. [Re: APCD Rule 1303, PTO 9114, 40 CFR 70.6]

#### **9.D APCD-Only Conditions**

The following section lists permit conditions that are not enforceable by the USEPA or the public. However, these conditions are enforceable by the APCD and the State of California. These conditions are issued pursuant to APCD Rule 206 (*Conditional Approval of Authority to Construct or Permit to Operate*), which states that the Control Officer may issue an operating permit subject to specified conditions. Permit conditions have been determined as being necessary for this permit to ensure that operation of the facility complies with all applicable local and state air quality rules, regulations and laws. Failure to comply with any condition specified pursuant to the provisions of Rule 206 shall be a violation of that rule, this permit, as well as any applicable section of the California Health & Safety Code.

- D.1 **Nuisance (Rule 303).** No pollutant emissions from any source at Torch shall create nuisance conditions. No operations shall endanger health, safety or comfort, nor shall they damage any property or business [APCD Rule 303].

AIR POLLUTION CONTROL OFFICER

\_\_\_\_\_

\_\_\_\_\_  
Date

NOTES:

- (a) This permit supersedes all previous "APCD-only Permits to Operate" issued for Platform Hillhouse; however, each ATC issued to Platform Hillhouse remains in force.
- (b) APCD Permit Reevaluation Due Date: March 22, 2003
- (c) Part 70 Operating Permit Expiration Date: March 22, 2005

## **10.0 Attachments**

**10.1 *Emission Calculation Documentation***

**10.2 *Emission Calculation Spreadsheets***

**10.3 *Fee Calculations***

**10.4 *IDS Database Emission Tables***

**10.5 *Part 70 Operating Permit Certified Compliance Plan***

**10.6 *Equipment List***

**10.7 *Exempt/Insignificant Equipment List***

-- This page intentionally left blank --

## 10.1 EMISSION CALCULATION DOCUMENTATION

### PLATFORM HILLHOUSE

This attachment contains all relevant emission calculation documentation used for the emission tables in Section 5. Refer to Section 4 for the general equations. The letters A-H refer to Tables 5.1-1 and 5.1-2.

#### Reference A - Crane Engines

- The maximum operating schedule is in units of hours.
- The default diesel fuel #2 characteristics are:
  - density = 7.043 lb/gal (36EAPI)
  - LHV = 18,410 Btu/lb (129,700 Btu/gal)
  - HHV = 19,620 Btu/lb (138,200 Btu/gal)
- North Crane BSFC = 7,272 Btu/bhp-hr  
energy based value using LHV  
Detroit Diesel 6V-71 engine specification basis = 0.395 lb/bhp-hr
- South Crane BSFC = 7,732 Btu/bhp-hr  
energy based value using LHV  
Detroit Diesel 3-71 engine specification basis = 0.420 lb/bhp-hr
- Emergency Drilling generator BSFC = 7,000 Btu/hp-hr  
energy based value using LHV  
Caterpillar D-348 engine specification basis = 0.380 lb./bhp-hr
- Emission factors units (lb/MMBtu) are based on HHV.
- LCF (conversion of LHV to HHV) value of 6 percent used.
- NO<sub>x</sub> emission factor consistent with Rule 333, *i.e.*, 8.4 g/bhp-hr.  
$$EF_{lb/MMBtu} = [(8.4 \text{ g/bhp-hr}) \times (10^6/\text{MM})] \div [(453.6 \text{ g/lb}) \times (\text{BSFC}) \times (1.06)]$$
- ROC, CO and PM emission factors based on USEPA AP-42, Table 3.3-1 (7/93).
- SO<sub>x</sub> emissions based on mass balance:  
$$SO_x \text{ (as } SO_2) = (\%S) \times (\rho_{oil}) \times (20,000) \div (\text{HHV})$$
- PM<sub>10</sub>:PM ratio = 1.0 (per AP-42); ROC:TOC ratio = 0.8378 (per APCD)
- Crane/Drilling engine operational limits: General Equation

$$Q = (\text{BSFC}) H (\text{bhp}) * (\text{LCF}) * (\text{hours/time period}) ) (\text{HHV, Btu/gal})$$

North Crane Engine

$$Q = (7272 \text{ Btu/bhp-hr}) * (238 \text{ bhp}) * (1.06) * (24 \text{ hours/day}) / (138,200 \text{ Btu/gal})$$
$$= 319 \text{ gallons per day}$$

$$Q = (7272 \text{ Btu/bhp-hr}) * (238 \text{ bhp}) * (1.06) * (500 \text{ hours/qtr}) / (138,200 \text{ Btu/gal})$$
$$= 6,638 \text{ gallons per quarter}$$

$$Q = (7272 \text{ Btu/bhp-hr}) * (238 \text{ bhp}) * (1.06) * (1000 \text{ hours/yr}) / (138,200 \text{ Btu/gal})$$
$$= 13,275 \text{ gallons per year}$$

South Crane Engine

$$Q = (7732 \text{ Btu/bhp-hr}) * (109 \text{ bhp}) * (1.06) * (24 \text{ hours/day}) / (138,200 \text{ Btu/gal})$$
$$= 156 \text{ gallons per day}$$

$$Q = (7732 \text{ Btu/bhp-hr}) * (109 \text{ bhp}) * (1.06) * (100 \text{ hours/qtr}) / (138,200 \text{ Btu/gal})$$
$$= 646 \text{ gallons per quarter}$$

$$Q = (7732 \text{ Btu/bhp-hr}) * (109 \text{ bhp}) * (1.06) * (200 \text{ hours/yr}) / (138,200 \text{ Btu/gal})$$
$$= 1,293 \text{ gallons per year}$$

Drilling Generator Engine

$$Q = (7000 \text{ Btu/bhp-hr}) * (730 \text{ bhp}) * (1.06) * (24 \text{ hours/day}) / (138,200 \text{ Btu/gal})$$
$$= 941 \text{ gallons per day}$$

$$Q = (7000 \text{ Btu/bhp-hr}) * (730 \text{ bhp}) * (1.06) * (100 \text{ hours/qtr}) / (138,200 \text{ Btu/gal})$$
$$= 3,920 \text{ gallons per quarter}$$

$$Q = (7000 \text{ Btu/bhp-hr}) * (730 \text{ bhp}) * (1.06) * (200 \text{ hours/yr}) / (138,200 \text{ Btu/gal})$$
$$= 7,839 \text{ gallons per year}$$

Reference B - Combustion Flare

- The maximum operating schedule for the purge/pilot gas and planned continuous flaring is in units of hours.
- The maximum operating schedule for the planned other and unplanned flaring is in units of percentage of annual usage.
- Purge and pilot flow rate based on Torch application.
- HHV = 1100 Btu/scf for all flare gas (per Torch application).
- Planned continuous flaring value based on one half the minimum detection limit of the flare meter.

Flare meter: Daniels 10-inch orifice meter

Minimum detection limit: 0.012 mmscfd (District assumption based on 0.25 scf/sec flow rate). Value agreed to between Torch and the District.



Maximum detection limit: 10.0 mmscfd

- Planned intermittent (other) and unplanned flaring volumes based on Torch/District agreed to values as contained in the draft PTO.
- Planned intermittent (other) and unplanned flaring events not calculated for short-term events per District policy.
- The same emission factors are used for all flaring scenarios, except SO<sub>x</sub>.
- NO<sub>x</sub>, ROC and CO emission factors based on USEPA AP-42, Table 11.5-1 (9/91).
- PM emission factor based on SBCAPCD Flare Study - Phase I Report, Table 3.1.1 (7/91).
- ROC:TOC ratio = 0.41 per APCD; PM<sub>10</sub>:PM ratio = 1.0
- SO<sub>x</sub> emissions based on mass balance:  
$$\text{SO}_x \text{ (as SO}_2\text{)} = (0.169) \times (\text{ppmv S}) \times (\text{HHV})$$

#### Reference C - Fugitive Components

- The maximum operating schedule is in units of hours.
- All safe to monitor components are credited an 80 percent control efficiency. Unsafe to monitor components (as defined in Rule 331) are considered uncontrolled.
- The component leak path definition differs from the Rule 331 definition of a component. A typical leak path count for a valve would be equal to 4 (one valve stem, a bonnet connection and two flanges).
- Leak path counts are provided by applicant. The total count has been verified to be accurate within 5 percent of the District's P&ID and platform review/site checks.
- Emission factors based on the SBCAPCD/Tecolote Report, *Modeling of Fugitive Hydrocarbon Emissions* (January 1986), Model B.

#### Reference D - Supply Boat

- The maximum operating schedule is in units of hours.
- Supply boat engine data based on Rincon Marine's *M/V Santa Cruz*.
- Two 2,000 bhp main engines (i.e., 4,000 bhp), two 245 bhp auxiliary engines (i.e., 490 bhp) and one 515 bow thruster engine are utilized.
- Main engine load factor based on District *Crew and Supply Boat* study (6/87).
- Supply boat bow thruster engine only operates during maneuver mode.

- Supply boat generator engines provide half of total rated load, either with one engine at full load or both engines at half load.
- Total time supply boat operates per trip within 25 miles of platform is 11 hours. A trip includes time traveling to and from the platform, as well as time operating at the platform. Typical trip is: 8 hours cruise, 2 hours maneuver and 1 hour idle. Annual time based on  $52/5 = 10.4$  trips. Quarterly based on  $26/5 = 5.2$  trips. Spot charter boats add  $11 * 10.4/10 = 11.4$  hours per year.
- Main engine emission factors are based only on cruise mode values.
- The break specific fuel consumption (BSFC) for the controlled main engines is 0.345 lb/bhp-hr. This value is from data supplied by Caterpillar for operation of each engine at 1,340 bhp. This bhp was used to select the BSFC because the engines are assumed to operate at 65% of full capacity during normal operations.
- The BSFC was converted from lb/hp-hr to gal/hp-hr by dividing the manufacturer's BSFC by 7.05 lb/gal, the density of diesel:  

$$0.049 \text{ gal/hp-hr} = (0.345 \text{ lb/hp-hr}) / (7.05 \text{ lbs/gal})$$
- Supply boat main engines achieve a controlled NO<sub>x</sub> emission rate of 5.48 g/bhp-hr through the use of Caterpillar 3516B diesel fired engines. The engines are electronically controlled, turbo-charged, and aftercooled. This emission factor equates to 247 lb/1000 gallons.  

$$EF_{NOx} = (5.48 \text{ g/bhp-hr}) / (0.049 \text{ gal/bhp-hr}) / (453.6 \text{ g/lb}) \times (1,000)$$
- Spot charter supply boat usage limited to 10 percent of actual annual controlled supply boat usage.
- Spot charter and Emergency Response vessels are normally uncontrolled for NO<sub>x</sub>.
- Uncontrolled ROC and CO emission factors for the main engines are based on USEPA AP-42, Volume II, Table II-3.3 (1/75) {cruise factor, 2,000 bhp/engine}.
- Uncontrolled NO<sub>x</sub> emissions from spot charter supply and emergency response boat main engines based on an emission rate of 14 g/bhp-hr. This emission factor equates to 561 lb/1000 gallons:  

$$EF_{NOx} = (14 \text{ g/bhp-hr}) / (0.055 \text{ gal/bhp-hr}) / (453.6 \text{ g/lb}) \times (1,000)$$
- PM emission factor for the main engines are based on *Kelly, et. al.* (1981).
- PM<sub>10</sub>:PM ratio = 1.00 (per AP-42); ROC:TOC ratio = 1.0
- All SO<sub>x</sub> emissions based on mass balance:  

$$SO_x \text{ (as } SO_2) = (\%S) (p_{oil}) (20,000) / (HHV)$$
- Auxiliary and bow thruster engine emission factors (uncontrolled) are based on USEPA AP-42, Table 3.3-1 (7/93). Table emission factors converted to fuel basis using:  

$$EF_{lb/1000 \text{ gal}} = (EF_{lb/MMBtu}) (19,300 \text{ Btu/lb}) (7.05 \text{ lb/gal}) / (1000)$$
- Spot charter engine set-up assumed to be equal to main supply boat.
- Emergency response vessel is permanently assigned to Platforms Henry, Hillhouse, A, B, C, Houchin, Hogan, Habitat, Hondo, Heritage, and Harmony. Vessel total bhp is 1,770 bhp. Short-term emissions from this vessel are not assessed. Long-term emissions are assessed equally amongst the eleven affected platforms.
- Emergency response vessel emissions calculated as an aggregate (main and auxiliary engines) using the uncontrolled supply boat emission factors. The long term hours of operating are back-

calculated based on the fuel usage allocation for this platform of 4,546 gallons per year (50,000 gal/yr basis).

$$T_{yr} = (4,546 \text{ gal/yr}) / ((0.055 \text{ gal/bhp-hr}) (1,770 \text{ bhp}) (0.65)) = 72 \text{ hr/yr}$$

- Main and auxiliary engine operational limits: General Equation

$$Q = (\text{BSFC}) (\text{bhp}) (\text{hours/time period}) (\text{load factor})$$

Main engines:

$$\begin{aligned} Q &= (0.049 \text{ gal/bhp-hr}) (4,000 \text{ bhp}) (11 \text{ hours/day}) (0.65) \\ &= 1,400 \text{ gallons per day} \end{aligned}$$

$$\begin{aligned} Q &= (0.049 \text{ gal/bhp-hr}) (4,000 \text{ bhp}) (57.2 \text{ hours/qtr}) (0.65) \\ &= 7,278 \text{ gallons per quarter} \end{aligned}$$

$$\begin{aligned} Q &= (0.049 \text{ gal/bhp-hr}) (4,000 \text{ bhp}) (114.4 \text{ hours/yr}) (0.65) \\ &= 14,556 \text{ gallons per year} \end{aligned}$$

Auxiliary engines – Generators

$$\begin{aligned} Q &= (0.055 \text{ gal/bhp-hr}) (490 \text{ bhp}) (11 \text{ hours/day}) (0.50) \\ &= 148 \text{ gallons per day} \end{aligned}$$

$$\begin{aligned} Q &= (0.055 \text{ gal/bhp-hr}) (490 \text{ bhp}) (57.2 \text{ hours/qtr}) (0.50) \\ &= 771 \text{ gallons per quarter} \end{aligned}$$

$$\begin{aligned} Q &= (0.055 \text{ gal/bhp-hr}) (490 \text{ bhp}) (114.4 \text{ hours/yr}) (0.50) \\ &= 1,542 \text{ gallons per year} \end{aligned}$$

Auxiliary engines - Bow Thruster

$$\begin{aligned} Q &= (0.055 \text{ gal/bhp-hr}) (515 \text{ bhp}) (2 \text{ hours/day}) \\ &= 57 \text{ gallons per day} \end{aligned}$$

$$\begin{aligned} Q &= (0.055 \text{ gal/bhp-hr}) (515 \text{ bhp}) (10.4 \text{ hours/qtr}) \\ &= 295 \text{ gallons per quarter} \end{aligned}$$

$$\begin{aligned} Q &= (0.055 \text{ gal/bhp-hr}) (515 \text{ bhp}) (20.8 \text{ hours/yr}) \\ &= 589 \text{ gallons per year} \end{aligned}$$

#### Reference E - Crew Boat

- The maximum operating schedule is in units of hours.
- Crew boat engine data based on Tidewater Marine's M.V. ~~Ashton Tide~~ Roff Tide.
- Three 510 bhp main engines (i.e.; 1,530 bhp) and two 109 bhp auxiliary engines are utilized.
- Main engine load factor based on District *Crew and Supply Boat* study (6/87).
- Crew boat auxiliary engines operate at one-half of total rated load.

- Total time crew boat operates per trip within 25 miles of platform is 3.5 hours per platform. A trip includes time to, from and at the platform. Typical trip is: 2 hours cruise, 1 hour maneuver and 0.5 hour idle. Annual time based on  $1,500/5 = 300$  trips. Quarterly based on  $375/5 = 75$  trips. Spot charter boats add  $3.5*300/10 = 105$  hours.
- Main engine emission factors are based only on cruise mode values.
- Crew boat main engines achieve a controlled  $\text{NO}_x$  emission rate of 8.4 g/bhp-hr through the use of turbo-charging, enhanced inter-cooling and 4E timing retard. This emission factor equates to 337 lb/1000 gallons.  

$$\text{EF}_{\text{NO}_x} = (8.4 \text{ g/bhp-hr}) (0.055 \text{ gal/bhp-hr}) (453.6 \text{ g/lb}) \text{ H (1000)}$$
- Spot charter crew boat usage limited to 10 percent of actual annual controlled crew boat usage.
- Spot charter vessels are normally uncontrolled for  $\text{NO}_x$ .
- Uncontrolled ROC and CO emission factors for the main engines are based on USEPA AP-42, Volume II, Table II-3.3 (1/75) {cruise factor, 500 bhp engine}.
- Uncontrolled  $\text{NO}_x$  emissions from spot charter crew boat main engines based on an emission rate of 14 g/bhp-hr. This emission factor equates to 561 lb/1000 gallons:  

$$\text{EF}_{\text{NO}_x} = (14 \text{ g/bhp-hr}) (0.055 \text{ gal/bhp-hr}) (453.6 \text{ g/lb}) \text{ H (1000)}$$
- PM emission factor for the main engines are based on *Kelly, et. al.* (1981).
- $\text{PM}_{10}:\text{PM}$  ratio = 0.96; ROC:TOC ratio = 1.0
- All  $\text{SO}_x$  emissions based on mass balance:  

$$\text{SO}_x \text{ (as SO}_2\text{)} = (\%S) * (\rho_{\text{oil}}) * (20,000) / (\text{HHV})$$
- Auxiliary engine emission factors (uncontrolled) are based on USEPA AP-42, Table 3.3-1 (7/93). Table emission factors converted to fuel basis using:  

$$\text{EF}_{\text{lb/1000 gal}} = (\text{EF}_{\text{lb/MMBtu}}) * (19,300 \text{ Btu/lb}) * (7.05 \text{ lb/gal}) / (1000)$$
- Spot charter engine set-up (*i.e.*, engine type, size) assumed to be equal to main crew boat.
- Main and auxiliary engine operational limits: General Equation

$$Q = (\text{BSFC}) * (\text{bhp}) * (\text{hours/time period}) * (\text{load factor})$$

Main engines

$$\begin{aligned} Q &= (0.055 \text{ gal/bhp-hr}) * (1530 \text{ bhp}) * (17.5 \text{ hours/day}) * (0.85) \\ &= 1,252 \text{ gallons per day} \end{aligned}$$

$$\begin{aligned} Q &= (0.055 \text{ gal/bhp-hr}) * (1530 \text{ bhp}) * (262.5 \text{ hours/qtr}) * (0.85) \\ &= 18,776 \text{ gallons per quarter} \end{aligned}$$

$$Q = (0.055 \text{ gal/bhp-hr}) * (1530 \text{ bhp}) * (1050 \text{ hours/yr}) * (0.85) \\ = 75,104 \text{ gallons per year}$$

Auxiliary engines - Generators

$$Q = (0.055 \text{ gal/bhp-hr}) * (218 \text{ bhp}) * (17.5 \text{ hours/day}) * (0.50) \\ = 105 \text{ gallons per day}$$

$$Q = (0.055 \text{ gal/bhp-hr}) * (218 \text{ bhp}) * (262.5 \text{ hours/qtr}) * (0.50) \\ = 1,574 \text{ gallons per quarter}$$

$$Q = (0.055 \text{ gal/bhp-hr}) * (218 \text{ bhp}) * (1050 \text{ hours/yr}) * (0.50) \\ = 6,295 \text{ gallons per year}$$

#### Reference F - Pigging Equipment

☞ Maximum operating schedule is in units of events (e.g., **twice per week/104 times per year** for oil receiver/launcher; **three times per week/156 times per year** for gas launcher and **twice per week/104 times per year** for gas receiver);

☞ The gas & oil launcher volumes, pressures, and temperatures based on file data;

☞ All vapors in the launcher is bled down to *either the well clean tank or the waste oil tank*; **all launchers and receivers are then purged and blanketed with 'sales gas' prior to opening the vessels to the atmosphere; The remaining vessel pressure is no greater than 1 psig, based on Torch's 5/7/97 and 8/19/97 stipulations to the APCD.** The temperatures of the remaining vapor in the vessels are as follows: (a) pig launchers temp. = 75°F, and (b) pig receivers temp. = 65°F (based on Torch application 9846 data)

☞ The  $MW_{\text{gas}} = MW_{\text{oil}} = 23 \text{ lb./lb.-mol}$ , since the launchers/receivers are purged and blanketed with sales gas in either cases (**Reference: Torch 5/7/97 and 8/19/97 letters**)

☞ Average ROC weight percent is = 12.92 % for gas launchers [**Reference: see Attached Field Test Data from OCS Platforms, submitted by Torch on 5/7/97 and revised on 8/19/97**]

☞ Average ROC weight percent is = 12.92 % for oil launchers [**Reference: see Attached Field Test Data from OCS Platforms, submitted by Torch on 5/7/97 and revised on 8/19/97**]

Pig vessel volume ( $V_{\text{ves}}$ ) = 5.07 acf (all launchers); 1.67 acf (gas receiver) and 8.25 acf (oil receiver) {per Torch data}, as indicated in Table 5.1-1 in the PTO.

☞ Density  $\rho = (\text{pressure} \times MW) \div (R \times T)$ , density of vapor remaining in the vessel (lbs. VOC/acf)

☞ Site-specific pigging emission factor  $EF = (\rho \times \text{ROC weight \%})$ , in (lb. ROC/acf-event) units

☞  $\rho_{\text{gas}} = \rho_{\text{oil}} = (15.7 * 23) \div (10.73 * 535) = 0.0629 \text{ lb./cu.ft}$ , density of THC vapor remaining in vessel, i.e., 0.0629 lb./cubic feet TOC for oil/gas launchers;

☞  $\rho_{\text{gas}} = \rho_{\text{oil}} = (15.7 * 23) \div (10.73 * 525) = 0.0641 \text{ lb./cu.ft}$ , density of THC vapor remaining in vessel, i.e., 0.0641 lb./cubic feet TOC for oil/gas receivers.

$$EF = 0.0629 * 0.1292 = 0.0081 \text{ lb. of ROC/acf-event for oil/gas launchers.} \\ = 0.0641 * 0.1292 = 0.0083 \text{ lb. of ROC/acf-event for oil/gas receivers}$$

#### Reference G - Sumps/Tanks/Separators

- Maximum operating schedule is in units of hours.
- Emission calculation methodology for tanks, sumps, and oil/water separators (Flotation cell flotation units) based on the CARB/KVB report *Emissions Characteristics of Crude Oil Production Operations in California* (1/83).
- Calculations of tank and sump emissions are based on surface area of emissions unit as supplied by the applicant.
- All tanks and sumps are classified as secondary production and heavy oil service.
- Emission factor for flotation cell is controlled by 95 percent (560 lb ROC/MMgal uncontrolled). Calculations of oil/water separator emissions are based on the daily throughput in MMgal/day as supplied by the applicant.
- All tanks, sumps, and separators are connected to vapor recovery or flare. A control efficiency of 95% is assumed for all vessels.
- Portable tanks are not connected to vapor recovery per Rule 325.B.1.b exemption. A throughput of 250 Bbl/day and a surface area of 280 ft<sup>2</sup> are assumed for emission calculations.

#### Reference H - Solvents

- All solvents not used to thin surface coatings are included in this equipment category.
- Daily, quarterly and annual emission rates per Torch application.
- Hourly emissions based on daily value divided by an average 8-hour day. Compliance with hourly data to be based on daily actual usage divided by 8.
- Emissions based on usage of 3,009 gallons per year with no APCD-approved reclamation program



## **10.2 Emission Calculation Spreadsheets**

(there are no additional emission calculation spreadsheets beyond Section 5)



-- This page intentionally left blank --

### **10.3 Fee Calculations**

Emission fees for Platform Hillhouse are based on a cost reimbursement basis pursuant to APCD Rule 210.

All work performed with respect to implementing the requirements of the Part 70 Operating Permit program are assessed on a cost reimbursement basis pursuant to APCD Rule 210.

-- This page intentionally left blank --

## 10.4 IDS Database Emission Tables

**Table 1**  
**Permitted Potential to Emit (PPTE)**

	NO <sub>x</sub>	ROC	CO	SO <sub>x</sub>	TSP	PM <sub>10</sub>
<b>PTO 9114- Reeval issued March 22, 2000</b>						
lb/day	1929.5	380.0	305.13	102.04	126.8	121.88
tons/year	25.72	51.74	19.99	3.06	2.93	2.84

*Reference: Table 5.2 (p.42)*

**Table 2**  
**Source Potential to Emit (FPTE)\***

	NO <sub>x</sub>	ROC	CO	SO <sub>x</sub>	TSP	PM <sub>10</sub>
<b>PTO 9110- Reeval issued March 22, 2000</b>						
lb/day	1925.9	333.29	305.27	102.05	126.79	121.75
tons/year	25.71	44.68	20.02	3.13	2.93	2.84
<b>PTO 9111- Reeval issued March 22, 2000</b>						
lb/day	1922.1	377.3	303.58	101.61	126.26	122.03
tons/year	25.59	52.81	19.73	3.10	2.91	2.83
<b>PTO 9112- Reeval issued March 22, 2000</b>						
lb/day	1922.3	296.15	304.97	101.75	126.33	122.08
tons/year	25.64	38.04	19.99	3.12	2.92	2.84
<b>PTO 9113- Reeval issued March 22, 2000</b>						
lb/day	2051.3	229.82	314.70	112.31	142.46	138.21
tons/year	27.96	21.83	20.74	3.30	3.21	3.14
<b>PTO 9114- Reeval issued March 22, 2000</b>						
lbs/day	1929.5	380.01	305.13	102.04	126.78	121.88
tons/year	25.72	51.74	19.99	3.06	2.93	2.84
<b>TOTAL Potential to Emit for Source on 03/22/2000</b>						
lbs/day	9751.1	1616.57	1533.65	519.76	648.62	625.95
tons/year	130.62	209.10	100.47	15.71	14.90	14.49

*References: Tables 5.2 in PTO's 9110 through 9114*

Table 3

**Federal Potential to Emit (PT 70 FPTE)\***

	NO <sub>x</sub>	ROC	CO	SO <sub>x</sub>	TSP	PM <sub>10</sub>
<b>PTO 9110- Reeval issued March 22, 2000</b>						
lb/day						
tons/year	30.4	15.0	20.9	3.4	3.2	3.2
<b>PTO 9111- Reeval issued March 22, 2000</b>						
lb/day						
tons/year	30.3	16.9	20.6	3.4	3.2	3.2
<b>PTO 9112- Reeval issued March 22, 2000</b>						
lb/day						
tons/year	42.2	20.5	25.3	4.4	4.2	4.0
<b>PTO 9113- Reeval issued March 22, 2000</b>						
lb/day						
tons/year	32.7	7.9	22.9	3.6	3.5	3.5
<b>PTO 9114- Reeval issued March 22, 2000</b>						
lbs/day						
tons/year	32.7	16.7	21.4	3.5	3.4	3.4
<b>TOTAL Federal Potential to Emit for Source on 3/22/2000</b>						
lbs/day						
tons/year	168.3	77.0	111.1	18.3	17.5	17.3

References: Tables 5.3 in PTOs 9110 through 9114

Table 4

**Facility Net Emission Increase Since 1990 (FNEI-90)**

	NO <sub>x</sub>	ROC	CO	SO <sub>x</sub>	TSP	PM <sub>10</sub>
<b>PTO 9110- Reeval issued March 22, 2000</b>						
lb/day		11.52				
tons/year		2.11				
<b>PTO 9111- Reeval issued March 22, 2000</b>						
lb/day		18.48				
tons/year		3.37				
<b>PTO 9112- Reeval issued March 22, 2000</b>						
lb/day		0.00				
tons/year		0.00				
<b>PTO 9113- Reeval issued March 22, 2000</b>						
lb/day		0.00				
tons/year		0.00				
<b>PTO 9114- Reeval issued March 22, 2000</b>						
lbs/day		13.76				
tons/year		2.51				
<b>Total for Stationary Source:</b>						
lbs/day		43.76				
tons/year		7.99				

References: Tables in Sections 5.7 of PTOs 9110 through 9114

**Table 5**  
**Facility Exempt Emissions (FXMT)\***

	NO <sub>x</sub>	ROC	CO	SO <sub>x</sub>	TSP	PM <sub>10</sub>
<b>PTO 9110- Reeval issued March 22, 2000</b>						
tons/qtr	0.74	0.30	0.16	0.05	0.05	0.04
tons/year	2.95	0.51	0.64	0.20	0.21	0.18
<b>PTO 9111- Reeval issued March 22, 2000</b>						
tons/qtr	0.74	0.30	0.16	0.05	0.05	0.04
tons/year	2.95	0.51	0.64	0.20	0.21	0.18
<b>PTO 9112- Reeval issued March 22, 2000</b>						
tons/qtr	3.62	0.57	0.79	0.25	0.26	0.22
tons/year	14.45	1.60	3.14	0.98	1.03	0.88
<b>PTO 9113- Reeval issued March 22, 2000</b>						
tons/qtr	0.58	0.29	0.13	0.04	0.04	0.04
tons/year	2.33	0.46	0.50	0.16	0.17	0.15
<b>PTO 9114- Reeval issued March 22, 2000</b>						
tons/qtr	6.70	0.69	1.43	0.33	0.48	0.45
tons/year	26.77	2.06	5.72	1.29	1.91	1.80
<b>Total for Stationary Source:</b>						
lbs/day	12.38	2.15	2.67	0.72	0.88	0.79
tons/year	49.45	5.14	10.64	2.83	3.53	3.19

*References: Sections 5.6 and 10.7 of PTOs 9110 through 9114*



## **10.5 Part 70 Operating Permit Certified Compliance Plan**



-- This page intentionally left blank --

## **10.6 Equipment List**



## 10.7 Permit-exempt/Insignificant Activities List

1. One (1) Standby Emergency Generator, 715 hp, (BSFC = 7000 Btu/hp-hr), diesel-fired IC engine: Caterpillar, 3412, No controls. (*Ref: 202.F.1.d*)
2. One (1) Standby Emergency Fire Pump, 200 hp, (BSFC = 7000 Btu/hp-hr), diesel-fired IC engine, Caterpillar 3408, No controls. (*Ref.: 202.F.1.d*)
3. One (1) Standby Emergency Drilling Generator, 730 hp, (BSFC = 7000 Btu/hp-hr), diesel-fired IC engine, Caterpillar D-348, No controls. (*Ref.: 202.F.6*)
4. Six (6) Diesel Fuel Tanks for IC engines, 756 gallons capacity each. (*Ref: 202.V.2*)
5. Maintenance Activity using the following coatings/thinner:  
Carbothane D134 HS, Carbomastic 15, Carboline 801, Carboline, and  
the following thinner/solvent:  
Methyl-ethyl-ketone (MEK), naphtha  
(*Ref: 202.D.8*)

*All permit-exempt maintenance activities are, however, regulated under the following APCD Rules:  
Rules 317, 321, 323, 324, 505 (a, b, and, d), and Regulation XIII.*